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ARMY RESEARCH LABORATORY



Taxonomic Workstation System User Guide

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May 1993

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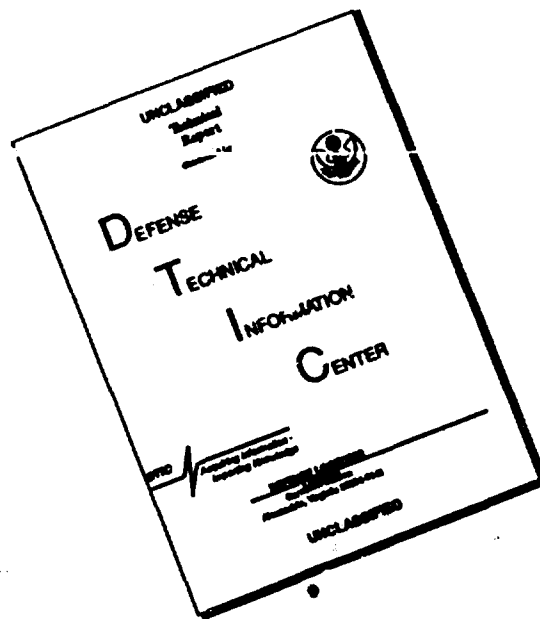
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13. ABSTRACT (Maximum 200 words) The Taxonomic Workstation System (TWS) is a relational data base management system which facilitates the development and manipulation of hierarchically organized information, thereby eliminating the need for the more onerous and time consuming manual task analysis systems. Its primary intended use is to describe task requirements and the knowledge, skills, and abilities required to perform them. TWS is generally intended for any application requiring the processing of structured lists such as task analysis efforts and research on human performance. This powerful, personal computer-based system can be used for job and task analysis, task inventory, classification, scenario creation, needs assessment, and risk assessment. This user guide should enable anyone with these kinds of needs to take advantage of the power of TWS.					
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SUMMARY OF THE TAXONOMIC WORKSTATION SYSTEM

INTRODUCTION

The Taxonomic Workstation System (TWS) is a PC-based, menu-driven relational data base used for creation and manipulation of taxonomies (or anything in a list structure). The data base is delivered with 14 taxonomies accessed from 16 system menus. The software allows the user to edit taxonomy components, to modify existing taxonomies, to create taxonomies using provided templates and to create customized applications using a generic program.

This User Guide provides information and directions for using the TWS software. The manual assumes that you, the user, have a working knowledge of the computer you use, MS-DOS, and any external programs or files that you may call from TWS. You must have ADVANCED REVELATION (AREV) to install TWS (see the section on Hardware and Software Requirements).

TWS FEATURE SUMMARY

The TWS operates on personal computers and has these features:

- (1) User friendly operating system with menus, windows and help screens.
- (2) Library of taxonomies, including military operations and command and control listings, battlefield conditions taxonomy, TRADOC's Blueprint of the Battlefield, and ability (cognitive, sensory, psychomotor) taxonomies.
- (3) Edit, merge and modify functions for taxonomies in the TWS Library.
- (4) Create, edit, merge, and modify functions for new taxonomies.
- (5) Query retrieval capability to search on designated terms.
- (6) Linkage of task and ability taxonomies.
- (7) Export, import features which allow for easy archiving and access to data.
- (8) Report generation.
- (9) Detailed User Guide, and Quick Reference Guide.
- (10) A structural system which allows 4 hierarchical levels.

TWS Summary

- o The Power of a Relational Data Base
The TWS operates within the environment of the database management system Advanced Revelation. The power of this programmable relational data base is available through the developed applications package which collectively is the TWS. A summary of the features of this kind of data base is contained in Appendix A.
- o Creating Taxonomies
TWS provides you with the capability to build taxonomies using a set of templates or a tool called the Generic Feature. Additionally, taxonomies can be created off line and imported to TWS. A separate chapter is devoted to demonstrating how to enter new taxonomies.
- o TWS Library
Fourteen taxonomies are contained in the TWS Library. They are:
 - Core Army Task Analysis
 - Field Test Task Analysis
 - Blueprint of the Battlefield
 - Conditions
 - Protective Ensemble Task Degradation
 - Failure Modes and Effects
 - CMF-MOS Listings
 - Verb Functions
 - Standard Task Analysis Parameters
 - Ability Taxonomies
 - Cognitive Abilities
 - Cognitive Repertories
 - Cognitive Constructs
 - Skills
 - Skill Clusters

The TWS data base is designed for flexible user-specific task analysis. It incorporates task descriptions and requirements factors, and personnel demands in terms of knowledge, skills, and abilities. These factors are contained in the 14 taxonomies delivered with the data base. Two taxonomies define the conditions and functions concerning missions; one defines parameters affecting tasks; two provide methods to classify each task; and, seven provide ways to link personnel demands to task analysis. A description of the modules in the Library is provided in Table 1.

Material from each taxonomy file can be collected in varying configurations to build a

TABLE 1

Description of Modules in TWS Library

Taxonomy	Description	Sample Layout & References
Core Army Task Analysis *	<p>The basic task analysis framework structure of US Army critical missions that were broken out by decomposition analysis. The missions were developed from the Army Training and Evaluation Program (ARTEP) for three major commands: Combat Arms (Infantry, Armored Cavalry, & Artillery Branches); Combat Support Arms (Engineer & Military Police Branches); Combat Service Support (Transportation Branch).</p> <p>The ARTEP missions are further decomposed into Operations, and Command and Control, with each broken out into tasks and subtasks. There are 113 missions, 806 tasks, and 3521 subtasks.</p> <p>These records can be combined with information from other taxonomies and collected into lists for analysis. New records for additional missions, tasks, and subtasks can be added to the Core taxonomy.</p> <p>Mission records can be cross linked with the Blueprint and Conditions taxonomies of the TWS Library; tasks can be cross linked with the Parameters and Failure Modes and Verbs taxonomies; subtasks can be linked with the Cognitive Abilities, Cognitive Reportories, and Cognitive Construct taxonomies.</p>	<p>A. Develop Plan Based on Mission</p> <ol style="list-style-type: none"> 1. Analyze the Mission <ol style="list-style-type: none"> a. Identify Specified Tasks b. Identify Implied Tasks 2. Identify Critical Combat Information & Intelligence <ol style="list-style-type: none"> a. Determine Avenues of Approach b. Determine Location of Obstacles c. Determine Enemy Air & EW Capability d. Determine Type, Size, Number, & Location of Enemy Maneuver Units <p>References: Rigg, Gray, McFann, & Harden (1985); ARTEPS (see listings under Dept of the Army in the Reference section); Dept of the Army (1979), TRADOC PAM 351-4; Dept. of Defense (1974).</p>

TABLE 1, cont.

Description of Modules in TWS Library

Taxonomy	Description	Sample Layout & References
Field Test Task Analysis *	<p>Lists of tasks and subtasks appropriate for use in field scenarios were devised for tank (M60/M1), Bradley Infantry Fighting Vehicle, and howitzer (M109) crews. There are 27 tasks and 247 subtasks in this collection.</p> <p>The subtasks are cross linked with the 42-item skills taxonomy.</p>	<p>A. Defend against Main Body</p> <ol style="list-style-type: none"> 1. Conduct Fire and Maneuver <ol style="list-style-type: none"> a. Designate a Support by Fire Section b. Designate a Maneuver Section c. Designate an Overwatch Section . . . <p>Reference: Rigg et al. (1985)</p>
Blueprint of the Battle-field Taxonomy	<p>The Blueprint functions taxonomy contains 727 functions as delineated under the seven Battle-field Operating Systems of Maneuver, Fire Support, Air Defense, Command and Control, Intelligence, Mobility and Survivability, and Combat Service Support.</p> <p>The Blueprint taxonomy can be linked with Mission records, allowing the building of function scenarios. Each Mission record has a Collector which lets you select and edit the core task analysis taxonomy. Each mission record has a collector which lets you select and edit functions for individual missions.</p>	<p>1. Maneuver BOS</p> <ol style="list-style-type: none"> 1.1 Move <ol style="list-style-type: none"> 1.1.1 Position/Reposition Forces (units & equipment) <ol style="list-style-type: none"> 1.1.1.1 Move on or Under Surface 1.1.1.1.1 Move while Mounted 1.1.1.1.1.1 Prepare for Surface Movement 1.1.1.1.1.1.1 Conduct Preoperational Checks 1.1.1.1.1.1.2 Load Combat Supplies & Equipment 1.1.1.1.1.1.3 Load personnel 1.1.1.1.1.2 Perform Tactical Movement 1.1.1.1.1.2.1 Initiate Movement <p>Reference: Dept. of the Army, TRADOC Pam 11-9</p>

TABLE 1, cont.

Description of Modules in TWS Library

Taxonomy	Description	Sample Layout & References
Failure Modes & Effects	<p>This taxonomy provides a method for rating the potential impact of <u>task failure</u> on the mission. The four <u>levels</u> have been applied to the command and control tasks in the core taxonomy.</p> <p>These ratings are a measure of failure modes and effects that are applied to combat critical tasks. The definitions of this 4-item taxonomy can be changed to meet any application.</p>	<p>4: Loss of mission and major equipment, casualties, and multiple loss of life</p> <p>3: Potential loss of mission, extended mission delay, equipment loss, casualties, and potential loss of life</p> <p>2: Mission delay, equipment damage or personnel injury.</p> <p>1: Minor mission delay, potential equipment damage or personnel injury</p>
CMF-MOS Listings	<p>This taxonomy gives a listing of the Military Occupation Specialities for several Army Career Management Fields. For example, the CMF Infantry lists several MOS-11 titles. The complete CMF-MOS taxonomy is listed in a data base dictionary.</p> <p>The taxonomy is specifically accessed with the Jobs option (see Chapter on Working with Lists). The CMF items can be collected when you are detailing Jobs for an analysis.</p>	<p>Reference: Rigg, et al. (1985)</p> <p>CMF 13 Field Artillery 13B Cannon Crewmember 13C Tacfire Ops Specialist 13E Fire Direction Specialist</p> <p>Reference: Department of the Army (1988), AR 611-201 (Note: MOSs are updated twice yearly; current listings can be obtained by writing: Commander, US Army Soldier Support Center -- NCR, ATTN: ATNC-MOS-A, 200 Stovall St., Alexandria, VA 22332)</p>

TABLE 1, cont.

Description of Modules in TWS Library

Taxonomy	Description	Sample Layout & References
Verb Functions	<p>The verb functions taxonomy provides a method for distinguishing the purpose of a task within a mission. The functions of operand, process, and product have been validated with the command and control tasks in the Core taxonomy.</p> <p>This taxonomy is maintained within the data base in the Synonyms Dictionary. The function of a task is defined when the appropriate definition is associated with the task description verb. It then will appear on every task entry record using that task verb.</p>	<div> <div>gather</div> <div>identify</div> <div>obtain</div> <div>request</div> </div> <div> <div>collect</div> <div>C2</div> <div>deceive</div> <div>defeat</div> </div> <div> <div>analyze</div> <div>communicate</div> <div>direct</div> <div>evaluate</div> </div> <div> <div>initiate</div> <div>monitor</div> <div>plan</div> <div>support</div> </div> <div> <div>advise</div> <div>defend</div> </div> <div> <div>detect</div> <div>load</div> </div>
	<p>Operand: An enabling task, providing energy, information, utilities or resources to other tasks; usually procedural and rarely provides a mission end-product; 8 verbs</p>	
	<p>Process: A transforming task, providing control, analysis, synthesis, or supervision in the process transformation of resources provided by operands; 29 verbs</p>	
	<p>Product: A task producing an observable mission product; 37 verbs</p>	
		Reference: Rigg et al. (1985)

TABLE 1, cont.

Description of Modules in TWS Library

Taxonomy	Description	Sample Layout & References															
Conditions	The conditions taxonomy contains 361 items under the headings of Environment, Terrain, Personnel, Friendly Forces, Operations, Tactics, and Threat. The taxonomy is divided into categories of related conditions, each of which includes an entry space for user-added items.	1. Environment 1.1 Light & Illumination 1.1.1 Full Sunlight 1.1.2 Moonlight 1.1.3 Starlight 1.1.4 Dark 1.1.5 Pitch Black 1.1.6 Artificial Lighting 1.1.7 Flares															
	<p>You can use <u>Mission</u> records from the core task analysis taxonomy to collect conditions taxonomy items. Each mission data record contains a space for conditions; you can list and edit as many conditions as you wish on a single mission record. This gives you a conditions scenario for the mission. You can change this collected list for the missions as you consider different scenarios.</p>	References: Wagner (1987, 1988); Rigg (1987)															
Protec- tive En- semble Task Deg- radation *	<p>This taxonomy contains factors concerned with the degrading of task performance under conditions using environmental protective gear. Factors are given for 152 tasks. Each task record gives the correction factor and probable range values for the task.</p>	<table> <tr> <th data-bbox="1098 638 1123 829">Task/Subtask</th><th data-bbox="1098 383 1123 574">Corr. Factor</th><th data-bbox="1098 234 1123 329">Range</th></tr> <tr> <td data-bbox="1131 638 1148 861">- M109/Remove</td><td data-bbox="1131 457 1156 510"></td><td data-bbox="1131 234 1156 329"></td></tr> <tr> <td data-bbox="1156 638 1181 861">- Breech Block</td><td data-bbox="1156 457 1181 510">1.5</td><td data-bbox="1156 234 1181 329">0.8-2.1</td></tr> <tr> <td data-bbox="1189 638 1214 861">- FADAC Printed Circuit Board/</td><td data-bbox="1189 457 1214 510"></td><td data-bbox="1189 234 1214 329"></td></tr> <tr> <td data-bbox="1222 638 1247 861">Replace Resistor</td><td data-bbox="1222 457 1247 510">1.9</td><td data-bbox="1222 234 1247 329">1.5-2.4</td></tr> </table> <p>Reference: Wick (1986)</p>	Task/Subtask	Corr. Factor	Range	- M109/Remove			- Breech Block	1.5	0.8-2.1	- FADAC Printed Circuit Board/			Replace Resistor	1.9	1.5-2.4
Task/Subtask	Corr. Factor	Range															
- M109/Remove																	
- Breech Block	1.5	0.8-2.1															
- FADAC Printed Circuit Board/																	
Replace Resistor	1.9	1.5-2.4															

TABLE 1, cont.

Description of Modules in TWS Library

Taxonomy	Description	Sample Layout & References
Standard Task Analysis Parameters	The TWS parameters taxonomy, derived from the Proposed Military Standard for Task Analysis, contains 138 parameters in the major categories of Input, Central Processing, Response, Feedback, Environmental, Safety, Health, Performance Standards and Workload, Social and Organizational, and Housekeeping. A last category, Other, is also included.	<p>7. Health</p> <p>7.1 Mechanical Forces</p> <p>7.1.1 Blast Overpressure</p> <p>7.2 Temperature Extremes</p> <p>7.3 Electromagnetic Radiation</p> <p>7.4 Toxic Substances</p> <p>7.5 Psychological Stress</p>
Ability Taxonomies	Items from the parameters taxonomy are collected on <u>Task entry records</u> from the core structure.	Reference: Myers et al. (1987)
<u>Cognitive Abilities</u>	This abilities taxonomy contains 21 cognitive abilities. The items are listed and defined in a TWS dictionary (see VIEW/STRUCTURE/SYNONYMS)	<p>1 (ADC Auditory Comprehension)</p> <p>2 (RDC Reading Comprehension)</p> <p>3 (OXP Oral Expression)</p> <p>4 (WXP Written Expression)</p> <p>7 (MEM Memorization)</p> <p>8 (PRB Problem Sensitivity)</p> <p>9 (MAT Mathematical Reasoning)</p> <p>10 (NMF Number Facility)</p> <p>11 (DDR Deductive Reasoning)</p> <p>12 (INR Inductive Reasoning)</p> <p>13 (INO Information Ordering)</p> <p>15 (SOC Speed of Closure)</p>
	The 21 abilities were used by subject matter experts to evaluate the personnel cognitive demands for <u>Subtasks</u> of the Core taxonomy. Each ability was scored as being either required (1) or not required (0) for each subtask. The results are shown in the abilities records.	

TABLE 1, cont.

Description of Modules in TWS Library

Taxonomy	Description	Sample Layout & References
<u>Cognitive Abilities</u> , cont.	These records show a table of values for each subtask organized by mission and tasks. Each ability is scored for each subtask; the score for each ability is summed for the task; and, the grand total of each ability is given for the mission.	16 (FLX Flexibility of Closure) 17 (SPO Spatial Orientation) 18 (VIS Visualization) 19 (PER Perceptual Speed) 20 (SAT Selective Attention) 21 (TMS Time Sharing) Reference: Fleishman & Quaintance (1984); Rigg et al. (1985)
<u>Cognitive Repertories</u>	This taxonomy has eight categories comprised of the 21 cognitive abilities used to evaluate Tasks. The repertories, therefore, provide a way to evaluate tasks in terms of cognitive categories. These repertories, their definitions and component abilities are shown in a TWS dictionary. The repertories values for each task were obtained from the subtask abilities values, and are validated. Each repertory record gives a table of values for the tasks organized by mission and designated Army branch organization. These values are summed for each mission, and a grand total is given for all of the branch missions.	NUMF Number Facility VISP Visual Perception CONR Convergent Reasoning DIVR Divergent Reasoning COVA Convergent Verbal Aptitude DIVA Divergent Verbal Aptitude MEMO Memorization STIM Stimulus Sampling Reference: Fleishman & Quaintance (1984); Rigg et al. (1985)

TABLE 1, cont.

Description of Modules in TWS Library

Taxonomy	Description	Sample Layout & References
<u>Cognitive Constructs</u>	<p>This taxonomy of 14 cognitive constructs was developed to identify a core of 136 most critical <u>Mission/Task/Subtask</u> (MTS) descriptions. The constructs are given in a TWS dictionary. The MTS core are part of the complete task analysis structure. The MTS components are listed by the subtask identification key, which defines the mission, task, and subtask grouping. Each subtask was rated by scoring each of the constructs as being either required (1) or not required (0). Each construct record shows a table of these validated ratings for the subtasks, which are organized by branch organization. The values are summed for each branch, and a grand total is given for the complete MTS list.</p>	<p>ATD Attention to Detail PRF Perception of Form MRR Memory Retrieval TMS Time Sharing CMP Comprehension CNF Concept Formation VRR Verbal Reasoning QNN Quantitative Reasoning PLN Planning STA Situation Assessment DCM Decision Making CMO Communication PRO Problem Solving CRE Creativity</p>
<u>Skills</u>	<p>Unlike the previous ability taxonomies, this 42-item list consists of more than just cognitive skills. The list is defined in a TWS Dictionary. These skills are cross linked with subtasks of the Field Test Task Analysis</p> <p>Each skill was scored as either required (1) or not required (0) for each subtask in the mission. These validated values are shown in tables in the skills records. Each subtask</p>	<p>References: Samet, Geiselman, & Gary (1985); Rigg et al. (1985)</p> <p>A01 Speech Comprehension A02 Reading Comprehension A05 Memorization A07 Number Facility A11 Speed of Closure A13 Spatial Orientation A14 Visualization A16 Control Precision A19 Reaction Time A21 Finger Dexterity</p>

TABLE 1, cont.

Description of Modules in TWS Library

Taxonomy	Description	Sample Layout & References
<u>Skills</u> , cont.	appears in three separate records, since a 42-item table must be broken into three 14-item parts for viewing. The skills subtask values are summed for each task, and a grand total is given for each mission.	A22 Manual Dexterity A25 Selective Attention A26 Divided Attention A30 Trunk Strength A35 Stamina References: Fleishman & Quaintance (1984); Rigg et al. (1985)
<u>Skill Clusters</u>	The 42 items of the skills taxonomy have been grouped into ten clusters to form a skill clusters taxonomy. The clusters are defined in a TWS dictionary.	II. Communication Skills A01 Speech Comprehension A02 Reading Comprehension VI. Precision Control Skills A21 Finger Dexterity A22 Manual Dexterity IX. Strength & Stamina A27 Static Strength A28 Explosive Strength A30 Trunk Strength Reference: Rigg et al. (1985)
	The ten clusters are given in a special list in TWS. The total value for the skills in each cluster is shown for the Subtasks. The clusters taxonomy lists each subtask by record key. These subtask listings can be collected for analysis.	

Note. To access these taxonomies, refer to the Chapters "Browsing through the TWS Library" and "Working with the TWS Library Modules." Definitions of many of the items in these taxonomies can be obtained by the menu selections VIEW/STRUCTURE/SYNONYMS.

* These taxonomies are not included in the set intended for non-DOD distribution.

TWS Summary

specific analysis. You are able to edit, update, enter, and display records.

o Other Capabilities

Other System functions include file and print capabilities, the translation of data for import and export communication, and the ability to use external applications programs without logging off the TWS.

Although the emphasis of the TWS is on military taxonomies and applications, some of the taxonomies and indeed the taxonomy tools (see the Chapters on working with, and creating taxonomies) can be used for a myriad of applications.

TAXONOMY DESIGN

TWS provides a core structure which is the framework upon which you build. This core framework contains missions, tasks, and subtasks. Additionally, every task analysis project is identified by a unique organization number, called the ORGNO. The ORGNO is the basic ID for the missions, tasks, and subtasks included for a particular set. This concept will be addressed throughout the manual.

ORGANIZATION OF THE MANUAL

- * The manual next presents hardware and software requirements and options, and installation instructions.
- * Next is a look at the general procedures for getting around in TWS. This will get you started and show you how to move through and select items from the menus. Techniques and special keys that are available throughout TWS are presented.
- * A discussion of Main Menu Functions comprises the remainder of the manual. The key functions, each detailed in separate chapters, are:
 - * (1) Browsing through already created taxonomies (i.e., the TWS Library, and any taxonomies that you create),
 - * (2) Working with the Library taxonomies (editing, rearranging items), and
 - * (3) Creating your own taxonomies

TWS Summary

NOTE ON TWO VERSIONS OF TWS

Non-DOD users will be supplied a version of the TWS which does not contain many of the military taxonomies; however, the full power and capability for browsing through, working with, and creating taxonomies is retained.

It is recommended that the user of the non-DOD version go to the chapter "Entering New Taxonomies" as soon as you have an understanding of TWS capabilities and feel comfortable with its operation. After completing the "Organizational Chart Setup", go to the section "Using the Develop Feature of the Main Menu." Then complete the instructions in the section "Building Custom Taxonomies." These procedures will provide you with examples which will make the chapters on Browsing and Working with TWS Library Modules easier to follow.

Requirements

HARDWARE AND SOFTWARE REQUIREMENTS

USER SUPPLIED SYSTEM

The following hardware list presents the minimum equipment and software required to operate the TWS system

Item Needed

Available Selection

MS-DOS Computer

An IBM Personal Computer, XT, AT, PS/2 or compatible computer with hard disk drive.

Memory

640K.

Floppy disk drive

One drive having any of the following formats:

- a. 360K 5.25 inch.
- b. 1.2Mb 5.25 inch.
- c. 720K 3.5 inch.

Hard disk

10Mb hard disk drive with 5Mb available space. This size requirement can be reduced by deleting unwanted TWS Library files once the system is loaded. See Appendix B.

Monitor and
adapter

80-column monochrome monitor and driver adapter.

Printer and driver

Epson, Diablo or HP-LaserJet II or any compatible printer that will emulate these machines. Parallel or serial driver card that is compatible with the selected printer.

DOS

DOS 2.0 or later version including 3.xx and 4.xx.

ADVANCED
REVELATION

ADVANCED REVELATION, a relational data base management system is required to run the TWS. See Appendix C for further information.

Optional Hardware

OPTIONAL EQUIPMENT The following brief list of optional equipment has been selected to give the user the largest performance return for equipment investment

Optional Items

Available Selection

Math coprocessor	An 8087 (PC/XT) or 80287 (PC/AT) math coprocessor will speed up statistical processing. If the user plans to develop other applications with the system, the coprocessor is recommended.
Memory	380K extended memory, system maximum enhanced memory. Note: extended and enhanced memory may be configured as RAM disk using IBM-DOS VDISK.SYS or managed by a user supplied disk cache.
Additional disk drives	System may be expanded to six total drives (A: through E:) operating under DOS 2.x. Using the extended environment available under DOS 3.x, the user may configure physical and virtual drives A: through Z:. TWS was developed on a system using a 40 Mb drive configured into two virtual drives of 32 and 8 Mb.
Monitor and Adapter	TWS supports Monochrome, Hercules, CGA, EGA, EEGA, and VGA monitors and cards. TWS was developed on a system using a multiple synch monitor and enhanced EGA 640 x 350 graphics adapter.
Modem	300/1200/2400/9600 Baud Modem.
Input devices	PC-Mouse, MicroSoft Mouse and compatible track ball and graphics tablet systems.

Optional Software

OPTIONAL SOFTWARE The Suspend mode feature of TWS makes the internal calling of applications programs a useful way to increase the flexibility of processing and efficiency of operation. The program is configured to call the following user supplied software applications programs. See section "Access to Applications Packages" in the chapter "Working with TWS Library Modules."

Optional Item	Description
PCPLUS	Shareware telecommunications software
Smartcom II	Telecommunications software
WORDSTAR	Word processor
WordPerfect	Word processor
SuperCalc	Electronic spreadsheet
dBASE II or III	Data base management system
Arity Prolog	AI natural language compiler

Installation

TWS INSTALLATION GUIDE

Distribution Disks The distribution disks contain all of the programs and data files needed to run the TWS system using the ADVANCED REVELATION AREV.EXE program that you must supply (See Appendix C for information on this data base management system).

TWS installation takes 20 minutes Installing the TWS software is a simple process that takes about 20 minutes from start to finish. You may stop the installation program at any time, if it is really necessary, but you will have to repeat the steps that were done prior to quitting.

Hard Disk Space Approximately 6 MB of disk space is required for TWS. Make sure that your hard disk has adequate space for the TWS program files.

Floppy Disks All you need to install TWS are the TWS System Disks and the ADVANCED REVELATION INSTALLATION DISK that came with your copy of Advanced Revelation. If you have not backed up these disks, do so before proceeding.

TWS Directory An AREV subdirectory is created off the root directory as follows:

```
Root directory
|
|--AREV
|   |
|   |--Indexing
|   |--TWS
```

Installing the TWS Files Place Disk Number 1 of the TWS file set into drive A. From the A drive, initiate the loading program by typing

INSTALL

To select the directory path listed on the screen, press {Return}; otherwise type in the desired path. Installation will begin, and you will be prompted for insertion of each TWS diskette.

Installation

Installing ADVANCED REVELATION

Finally, place the back up copy of the
ADVANCED REVELATION INSTALLATION DISK in disk
drive A. Copy the file named AREV to the
AREV subdirectory using this statement:

`COPY A:AREV \AREV\AREV.EXE`

Read the copy command carefully

The AREV file on the ADVANCED REVELATION
INSTALLATION DISK has NO extension; you MUST
add the .EXE as shown in the example.

Running TWS

Log on and off procedures, and general
instructions for getting around in the TWS are
provided in the next section (BASIC
OPERATIONAL PROCEDURES).

Color Monitor Setup

If you have a color monitor and wish to
customize the colors, turn to Appendix D for
easy setup procedures.

BASIC OPERATIONAL PROCEDURES

TWS LOGON

The procedure shown here is for logging on to TWS after it has been installed (Please refer to the TWS INSTALLATION GUIDE to install TWS). You log on to TWS from your DOS prompt by typing:

(Note: Keys you are to press are shown in { }. {CR} is the carriage return/Enter key)

CD\AREV {CR} and, then: AREV {CR}.

When the TWS Main Menu is on your screen, you press the {F5} key.

This will open a window in which you enter:

ATTACH TWS {CR}

You will see a message flash below the window: "LISTS changed from volume REVBOT to volume TWS". After the message has flashed, press the {ESC} key.

You are now logged on to TWS.

GETTING AROUND
IN TWS

o Menu Item
Selection

The menu selection system from which you operate TWS makes getting around a fairly simple procedure. You select a menu item by first highlighting it with the cursor. You can move the cursor in two ways. You can use either the Up, Down, Right, and Left {ARROW} keys, or the first letter of the menu item you want. The cursor will continue to rotate through a menu, so you can go back and forth. When a menu has two or more items with the same starting letter, the cursor will move from one to the next as you continue to press the initial letter.

When the cursor is on the item you want, press {CR} to select it. If you choose an item by mistake, simply press {ESC} to return.

o The {ESC} key
always takes
you back

{ESC} will always let you escape back through the program. This will work from individual screens, help windows, menus, and popups. Each time you press {ESC} you move one step back towards where you started. Keep pressing it until you reach the desired location.

Operational Procedures

- o **Function Keys** The function keys have the same capabilities in TWS as they do in AREV. The function keyboard template provided by AREV will give you the appropriate guidance for TWS. Each key operates in both plain (e.g., {F1}) and control-key (e.g., {CF1}) mode.

- o **TWS Help Screens** Every TWS menu selection has a help line at the bottom of the menu. This statement provides information about that menu selection.

The function key {F1} will show you all the help lines for that menu in one window. Press {ESC} to return to the menu.

The function key {F2} will show you menus that are available from the menu selection you're on. This appears as a window with options. Use the Arrow keys to move the cursor and {CR} to select. If the window has more than one page, use {PgDn} to go from Page 1 to Page 2, and {PgUp} to go back to Page 1.

Use {F1} for TWS help Specific help screens for TWS are provided throughout the program. The primary help access is the {F1} key. Using this key will give you help information from menus, windows, popups, and single record entry lines. Use {CF1} for the explanation of all levels of help.

- o **EXIT Options**
 - TWS LOGOFF** You logoff TWS from the EXIT option on the TWS Main Menu. The LOGOFF selection actually quits the TWS program, signing you off. Choosing LOGOFF means that you must go through the signing on procedure to return to TWS. The four options below will return you to TWS.

 - DOS & SUSPEND** Both the DOS and SUSPEND options take you to DOS for processing. The difference is how much RAM you have available for DOS. The DOS exit option does not write AREV to the hard disk, but the SUSPEND option does. The DOS option, then, is used for minor processing. SUSPEND is used for major work.

Operational Procedures

In order to return to TWS from either DOS or SUSPEND, type EXIT.

Note: The SUSPEND function creates a large temporary file; it is automatically deleted when you reenter TWS by typing EXIT at the DOS prompt. If you do not reenter TWS this way, you will get a warning message the next time you try to use SUSPEND. You will need to then choose DOS from the EXIT menu, and delete ROLL.OUT.SUS manually at the DOS prompt)

TCL & AREV

The TCL option lets you use terminal level language (The Command Language) for direct entry of commands. Choosing TCL opens a window for you, and typing RESET will return you to TWS.

Note: Most of your TCL work will most likely be from within the TWS rather than as an EXIT option. TCL can be easily accessed from TWS by pressing {F5}; this feature is described throughout the manual. Entry back to TWS is achieved by pressing {ESC}.

The AREV option sends you to the REVELATION Main Menu which will appear tiled on to TWS. Using {ESC} from this menu returns you to TWS.

o Hang Up Note

If while running the TWS, the system freezes up, a reboot is not necessary. If there is a message ending with an exclamation point (!), simply type END {CR}; you will be returned to TWS. If there is no !, press {A} to get an !, then type END.

MAIN MENU FEATURES

SUMMARY

- o TWS Main Menu has 8 Options

There are eight selections on the TWS Main Menu, each of which leads to at least one more set of selections. Many of these selections share the same titles; the configuration or function they lead to varies. You move from one menu to another by the selection you make, so you don't see all the choices at the start. However, the menu trail, once you've made a choice, remains on the screen.

Your choice of a Main Menu item should depend on the function you want: browsing through the TWS Library contents, working with lists in the Library taxonomies, entering a taxonomy, communicating files, or exiting the TWS.

- o Unfolding the Menus

Each of these eight selections unfold to further menus. Most menu selections clearly name their contents, and are easy to remember once you've worked with them.

FUNCTIONS OF THE MAIN MENU SELECTIONS

A summary of the functions of the Main Menu selections is given below. The uses of these procedures will be demonstrated in following chapters.

- o SCAN

The operation of scanning is to allow a rapid look at selected portions of the TWS Library in list format. Selecting this option from the Main Menu results in a submenu containing 15 selections. Operation of SCAN and the contents of the submenu selections is covered in the section "BROWSING THROUGH THE TWS LIBRARY".

- o VIEW

The VIEW menu option shows you the report format for each taxonomy and structure in the TWS data base. View lets you see the information in a structured format. For example, looking at Subtasks through the SCAN option shows you the entries as items in a list, the VIEW Subtask report includes the titles of each subtask, plus its related task and mission, and organizational breakdown. See the section "BROWSING THROUGH THE TWS LIBRARY" for specifics on this function.

Main Menu

- o COLLECT This option is used to assemble items for creating new lists from existing TWS records. The COLLECTOR lets you copy items into a separate file which becomes part of a Directory. Operation of this function is covered in the section "WORKING WITH THE TWS LIBRARY MODULES".
- o DEVELOP The Develop function contains entry record templates for creating new taxonomies in TWS. In addition to developing task analyses, you can also use this option to edit and update existing taxonomies. See the chapter "ENTERING NEW TAXONOMIES" for the former function and "WORKING WITH THE TWS LIBRARY MODULES" for the latter.
- o FILE-PRINT The File-Print option lets you select records from TWS for either filing in a DOS file or printing out. The records will be in the View report structured format. See "WORKING WITH THE TWS LIBRARY MODULES".
- o TRANSLATE You use this option to EXPORT and IMPORT data files. The Translate option has a two-level menu, with the Export selection first which leads to the Import menu:
 - Export: Lotus 123, ASCII, dBase III, Modem, Import
 - Import: Lotus 123, ASCII, dBase III, ModemThese selections have templates for you to configure the files. You will need to know, or refer to the specific application package manual for the proper configurations of these files. Examples for working with ASCII are provided. EXPORT is discussed in the chapter "WORKING WITH THE TWS LIBRARY MODULES", and IMPORT is detailed in "ENTERING NEW TAXONOMIES."

A special feature has been developed which allows you to translate files from TWS to the PC modeling package MicroSAINT. Details are provided in Appendix E.

Main Menu

- o ACCESS

The Access option is a single level menu, letting you use external applications programs without logging off the TWS. These programs are user-supplied, although sample routines are provided.

The Access menu lets you select Wordperfect, Wordstar, Supercalc, dBase, PROLOG, and DOS.

See the applicable section in the chapter "WORKING WITH THE TWS LIBRARY MODULES".

- o EXIT

EXIT options are outlined in the previous chapter "Basic Operational Procedures."

BROWSING THROUGH THE TWS LIBRARY

USE SCAN TO
LOOK AT "RAW"
LISTS

From the TWS Main Menu, choosing the SCAN option shows you a 15-category menu. You can browse through any of the taxonomies previously described in Table 1 by selecting from this SCAN menu:

<u>Taxonomy</u>	<u>Menu Selection</u>
— Core Army Task Analysis	Missions, Tasks, or Subtasks
— Field Test Taxonomy	Tasks or Subtasks
— Blueprint of Battlefield	Functions
— Conditions	Conditions
— Protective Ensemble Task Degradation	Generic
— Failure Modes & Effects	(Levels defined in Table 1; for example of application, see subsection on VIEW)
— CMF-MOS	Synonyms
— Verb Functions	Synonyms; for example of application, see subsection on VIEW)
— Standard Task Analysis Parameters	Parameters
— Ability Taxonomies	
Cognitive Abilities	Synonyms; for cross linkage with CORE subtasks, select Abilities (because of screen size limitations, only 18 of the 21 appear, but all are accessible using the special features such as Terminal Control Language (TCL), FILE-PRINT, Export and Import)

Taxonomy

Menu Selection

Cognitive
Repertories

Synonyms; for cross linkage with CORE
subtasks, select Repertories

Cognitive
Constructs

Synonyms; for cross linkage with CORE
subtasks, select Constructs

Skills

Synonyms; cross linkage not available in SCAN
(but see Skill Clusters, below, and the
section on VIEW in this chapter)

Skill
Clusters

Synonyms; for cross linkage with Field Test
taxonomy subtasks, select Skills

-
- o Contents of
TWS Taxono-
mies

A guide to the contents of the more elaborate
taxonomies is presented in Appendix F.
Selecting a few topics of interest will give
you a feel for menu operation and an idea of
the nature of the taxonomy items.

- o Using
Directories

When you make a selection from the SCAN menu,
you will see a Directory. The Directory
window shows you the set of lists that
currently exists for the category you've
chosen. Each directory has a line between the
top lists and the rest. List names above the
line, like ALL.MISSIONS, should not be used
to save special sets of lists you wish to
build from the supplied taxonomies (this
building function is called COLLECT and is
described in the section "WORKING WITH THE TWS
LIBRARY MODULES). The list named
CATEGORY.COLLECTOR.LIST is meant to be used as
a temporary holding location for a given set
of records.

You can choose to scan through any list in the
Directory, above or below the line.

- o Making a
Directory
Selection

When you are at a Directory window, you move
the cursor to the list you want and select it
with {CR}; or, you can enter the number of the
desired selection. Use the PgUp and PgDn keys
to scan pages. If you do not wish to make a
selection from the Directory, press {ESC}
twice to get back to the menus.

Browsing-SCAN

- o ID Key As you scan through the CORE taxonomy holdings, you will notice an ID key code which is "attached" to each listing. This code is explained in the following example.

EXAMPLE SCAN.1

- o Looking at a CORE Task Analysis & its ID Key
Using the CORE taxonomy as an example, if you select MISSIONS from the SCAN menu, and then INF.MISSIONS (Infantry Missions) from the Directory, the first listed item is "1*A Develop Plan Based on Mission."
- o ORGNO
The first part of the code, the number 1, refers to the Organization Number (ORGNO). A different ORGNO is assigned to a separate task analysis. A listing of all the ORGNOS currently assigned to the TWS Library is shown in Appendix G (you can also get a listing by choosing ORGCHART from the SCAN menu and selecting No. 1 from the Directory). The listing shows that ORGNO 1 pertains to infantry command and control (CNC); note that ORGNO 2 corresponds to infantry operations.
- o Mission & Tasks
The second part of the code is the Mission designator (called MISSIONID), in this case, A. To see the tasks which are associated with this mission, press {ESC} to get back to the SCAN menu, select TASKS, then selection INF.CNC.TASKS from the Directory. Note that 14 tasks are associated with mission A. The third level of the code thus associates a given task to a mission.
- o Subtasks
To see which subtasks go with each task (for a given mission), select SUBTASKS from the SCAN menu, then INF.CNC from the Directory. The fourth part of the ID key refers to the subtask identifier.
- o Summary of Code
The ID Key is:

ORGNO/MISSIONID/TASKNO/SUBTASKID
- o Cross Linkage
To see the Infantry Command and Control subtasks classified by the Cognitive Abilities taxonomy, select ABILITIES from the SCANNER menu, then select INF.CNC from the Directory.

Browsing—VIEW

See Table 1 in the first chapter for a summary description of the Cognitive Abilities taxonomy.

USE VIEW FOR REPORT FORMAT

The function of the SCAN feature is to allow a quick perusal of the TWS Library. It is an easy way to see the contents of taxonomies in list format. If you are concentrating on a given taxonomy, however, you may want more information to be available; the VIEW feature lets you see the information in a structured format.

o You have Structure Choices

Option features give you the choice of seeing certain information. For example, in SCAN mode, Subtasks are shown as items in a list. In VIEW, you can request ORGCHART titles and mission and task descriptions when the option for them appears on the screen.

o Use {F6} to Call up Info Windows

Those reports which consist of a cross linkage of a task analysis with the skills or abilities taxonomies are presented as a two-way matrix of data. The column heads are abbreviations for the category. The synonyms for these headings are available with {F6} in two ways:

- At the start of a set of reports, a message flashes telling you about the {F6} key; press it then to get a listing. See Example VIEW.1
- It is also available in every report; press it during the time the data is being written on the screen

o Using the Selections

Access to the taxonomies from the VIEW menu is shown in the following chart. Select VIEW from the Main Menu, then proceed as indicated below. After making a Directory selection, the {ENTER} key moves you through the list (the PgUp & PgDn keys are not functional in the VIEW mode); only forward scrolling is available.

<u>Taxonomy</u>	<u>Menu Selection</u>
— Core Army Task Analysis	INVENTORY/Missions, Tasks, or Subtasks
— Field Test Taxonomy	INVENTORY/Tasks or Subtasks
— Blueprint of Battlefield	STRUCTURE/Functions
— Conditions	STRUCTURE/Conditions
— Protective Ensemble Task Degradation	ADDITIONAL SCALES/Generic
— Failure Modes & Effects	(Levels defined in Table 1; for example of application, see Example VIEW.1 below)
— CMF-MOS	STRUCTURE/Synonyms
— Verb Functions	STRUCTURE/Synonyms (for example of application, see below)
— Standard Task Analysis Parameters	STRUCTURE/Parameters
— Ability Taxonomies	
Cognitive Abilities	STRUCTURE/Synonyms; for cross linkage with CORE subtasks, select ADDITIONAL SCALES/Abilities (because of screen size limitations, only 15 of the 21 appear, but all are accessible using the special features such as Terminal Control Language (TCL), FILE-PRINT, Export and Import)
Cognitive Repertories	STRUCTURE/Synonyms; for cross linkage with CORE subtasks, select ADDITIONAL SCALES/Repertories
Cognitive Constructs	STRUCTURE/Synonyms; for cross linkage with CORE subtasks, select ADDITIONAL SCALES/Constructs

Taxonomy

Menu Selection

Skills	STRUCTURE/Synonyms; for cross linkage with Field Test taxonomy subtasks, select ADDITIONAL SCALES/SKILLS, then select from the Directory
Skill Clusters	STRUCTURE/Synonyms; cross linkage not available in VIEW

- o Comprehensive Inventory Listing In addition to the screen listings generated by the above menu selections, a convenient comprehensive listing of taxonomies to the Subtask level is available by selecting INVENTORY from the VIEW Menu, then INVENTORY from the INVENTORY Menu.

EXAMPLE VIEW.1

- o Missions Call up the Infantry MISSIONS list used in Example SCAN.1 by selecting VIEW from the Main Menu, then INVENTORY, then MISSIONS. Choose INFANTRY.MISSIONS, and accept the option of ORGCHART breakdown by pressing {ENTER}. One mission per screen appears. Note that spaces show for information from the Functions and Conditions taxonomies (described in Table 1). For an example of items added to a mission list, go back to the Mission Directory (press {ESC}) and select Armored Cavalry; information from the Blueprint of the Battlefield and Battlefield Conditions taxonomies was added to missions 14.A and 14.B.
- o Tasks Call up the Infantry Command and Control TASK list by selecting TASKS from the INVENTORY menu, then INF.CNC.TASKS. Accept both options for information. Task 1.A.1 has attached to it a Verb Function, Failure Mode and Criticality score, and Parameter information (details of these taxonomies are in Table 1).
- o Subtasks Directory selection INF.CNC from the SUBTASK menu will list Infantry Command and Control subtasks. Select all three information options.
- o Comprehensive Listing For an overview, select INVENTORY from the INVENTORY Menu, then INF.CNC

Browsing—TCL

o Cross Linkage

Infantry Command and Control subtasks matched with Cognitive Abilities are accessed by choosing ADDITIONAL SCALES from the VIEW menu, then ABILITIES, and finally INF.CNC. Accept the two options, and press {F6} when the informational window announcing a pop-up feature flashes. The resulting window lists the titles of the Ability abbreviations (use the PgUp & PgDn keys to scroll through the list). See Table 1 for more information on the Cognitive Abilities taxonomy. Press {ESC} to remove the pop-up window and finish screen printing for the subtasks associated with the first task. Then press {ENTER} to bring up the next screen. The pop-up feature can be invoked again by pressing {F6} as the material is being written to the screen.

USE TCL FOR SPECIFIC LOOK-UPS

Terminal Control Language (TCL) has some very powerful and easy-to-use query features which allow more specific browsing through files. A detailed description of TCL is provided in Appendix H.

WORKING WITH TWS LIBRARY MODULES

LISTS

List processing is a central feature of TWS. The TWS application software is delivered with over 175 lists, and you will very quickly begin to add your own lists to this number. The variety of uses for list processing is almost unlimited: build jobs, duties, directories, dictionaries, indexes, and collections; divide large data files into smaller and more manageable groups of items that have related attributes.

This chapter describes how to work with the lists in the TWS libraries (the principles apply directly to taxonomies you create yourself). The next chapter shows how to build taxonomies from scratch.

- o A list is really a Collection of Record Keys

Every record in a TWS file has a unique record key (i.e., ID code). This record key can be used to access any part or all of the record that it identifies. The software takes advantage of this unique record key in constructing lists. The lists that are built, stored, and processed are actually ordered lists of record keys.

- o Listmaking is a 2-Step Process

In all cases the creation of a list involves two steps:

- Assembling a collection of record keys, and then
- Naming and saving the collection as a record in the LISTS file

The Main Menu function you use for this process is COLLECT, described below.

BUILD A LIST
FROM A LIBRARY
TAXONOMY WITH
COLLECT

The Collector Key directories operate the same way the Scanners do. And you can read through the items in a selected list in the same way. The Collector, however, lets you collect items into a new list.

Working with Lists—COLLECT & TCL

- o Collectors will Order the Items You Select

You choose items by moving the cursor to those you want, and pressing {CR}. When you choose the first item, the number 1 appears in the Order column; the second item you choose becomes number 2, and so on. You can remove an item from your choices by returning the cursor to it and pressing {CR} again. When you do this, the Order column automatically rennumbers the items.
 - o Saving a List after Items have been Collected

Use the SAVE {F9} key to accept the list when you have chosen all the list items. This procedure will call up an EDIT KEYLIST window which shows the record key labels. Press {F9} again to initiate the list-naming part of the process.
 - o Caution: A List will overwrite the contents of any previous list with the same name

You will see the question "Save as NAME. COLLECTOR. LIST? {CR} = Yes", where NAME = Mission, Task, etc. If you want your list saved in this scratch buffer (selection number 2 of the applicable Directory), accept this list name by pressing {CR} and then {F9} to save it.

You can give your list any name by typing {N} for No at the question. Then enter a list name using any format which is applicable to your needs.
 - o Location of New List

Your new list is now added to the appropriate Directory (e.g., Missions, Tasks, or Subtasks Directory). If you accepted the default name it appears as selection number 2. If you gave it your own name, this file appears on the Directory as the first entry below the line. Your new list can now be called up via SCAN, VIEW, COLLECT, or FILE-PRINT.
- BUILD A LIST FROM A LIBRARY TAXONOMY USING TCL
- The Terminal Control Language (TCL) feature was introduced in the BROWSE chapter (see Appendix H for details). If you want to create a list whose items have a related attribute, the SELECT function will automatically gather those items without the user having to search through a list to collect them. Assume for example that you want to assemble a list of Tasks from the CORE Taxonomy which begin with PLAN. Press {F5} to invoke the TCL mode, then type:

Working with Lists—Editing

SSELECT TASKS WITH TASK 'PLAN]' {CR}

(Note: SSELECT Sorts & Selects the records on the ID key)

Then use the SVELIST command to name and save these records:

SAVELIST PLAN.TASK {CR}

Note: You can focus your queries on specific lists (1) by specifying an ORGNO in the query statement, or (2) by first accessing a list using the GETLIST command (e.g., GETLIST MISSIONS.OPS) to bring up a list which is on a Directory.

- o Assign the List to a Directory

The newly created list can be assigned to the appropriate Directory by performing these simple steps:

- From the Main Menu, select DEVELOP, then DATA BASE STRUCTURE, then INDEX LISTS
- Scroll to the appropriate Index item (e.g., Tasks, Jobs, Abilities) and press {CR}. Cursor to the point just above where you would like to add the name, press {CR} to create a blank line, then type in the list name (e.g., PLAN.TASK for above example.)

(Note: For a list of editing commands, press {F1}, then {F2} for specifics)

- Press {F9} to save the addition, then {ESC}.

You have now added a list to the TWS Library. Any time you call up the Directory, this new list will appear as a selection.

EDITING OF LISTS

- o Reordering or Deleting Records

In further work with your new list, or in using the TWS supplied lists, you may want to reorder or drop some of the records. Simply call up the file via COLLECT, and create a new arrangement per the selection instructions in the section above on the use of COLLECT. Then, save the new list under the file name which suits your needs (Remember the Caution note above).

Working with Lists—Templates

o Deleting the Entire File

You may decide to delete certain lists. The easiest way to do this is to call up the file in the COLLECT mode, and without selecting any items, go through the save procedures as described in the COLLECT section above (i.e., save nothing to the file name in question—be sure to use the proper file name!). The list no longer appears on the Directory.

Note: Deleting unwanted taxonomies to claim more hard disk space can be easily accomplished by following the procedures outlined in Appendix B)

o Using ENTRY-UPDATE Templates to make Changes to Items in a List, to Add new Items to a List, or to Delete Items

The following procedures are easy and handy to use for minor editing to your lists. It is best to know in advance the ID codes of the items you want to edit (simply browse through the list in SCAN, e.g., & make a note of the codes of those records to be changed).

- From the TWS Main Menu, select DEVELOP
- From the next menu choose from DATA BASE STRUCTURE, INVENTORY ANALYSIS, or ADDITIONAL SCALES, depending on where your list is located (e.g., if you are dealing with Missions, you would select INVENTORY ANALYSIS)
- From the next menu, make a selection based on the type of list you have
- {F9} is used for saving changes to records. See also the next section on List Maintenance.

Technique 1

At the template, if you know the ID record keys for the records you want to change, enter the ID for the first record at the top prompt, then work your way through the template. If you want to delete a record, press {ALT}-{D} two times. For new records, simply enter the appropriate codes to the prompts. More information on the use of these templates is available in the next chapter on "ENTERING NEW TAXONOMIES". Skip the next subsection on Technique 2 if you have a list of ID keys for editing.

Working with Lists—Templates

Technique 2

- At the template, press {CTRL}-{F10}
- Select number 3, GETLIST {CR}
- Type the name of the list you want to edit and press {F9}

Note: If you are unsure of the list name and have already pressed {CTRL}-{F10} or made selection number 3, press {ESC} to get a clear template, then press {F6} and call up the Scanner Directory which contains the applicable type of lists from which you want to choose. Once you have a list name {ESC} back to the clear template, and proceed as above by entering the code information and scrolling to the appropriate line(s) of the template (using {CR}, arrow keys, or PgUp/PgDn) to make your edits.

{F9} is used to move to the next record of the taxonomy if you do not need to perform any edits to the current record.

Special Sections of the Template

Note the use of the {F6} key as an aid in adding new text or making replacements to the special sections of the Missions and Tasks templates, that is, the Conditions, Functions, and Parameters areas. Although you can type in any information, using these actual taxonomies via the Collector from the pop-up menu at {F6} is easy: with the cursor in the appropriate special section area, press {F6}. Select the applicable Collector, then a list from the next menu, then Collect the items you want by highlighting the areas and pressing {CR}. When done collecting, press {F9}. The items will automatically appear in the section of the template in question (& will overwrite any information already there). For any editing of information in these special section, press {F3} and make the changes. Press {F9} to save your items in the special section.

(Note: Any edits to these collected lists of Conditions, Functions, or Parameters while using a Develop template do not affect the Master Lists from which you obtained the items. To make permanent Master List changes to these special taxonomies you would need to

Working with Lists—Templates

go to the Master List itself (e.g., DEVELOP/DATA BASE STRUCTURE/CONDITIONS), and make the edits using the applicable template).

A special section of the Subtasks template is the Elements section. Elements can function as the 4th level of a taxonomy. Items peculiar to a given subtask may be directly entered and edited here. Common items among subtasks can be easily copied to other subtasks. You the user enter the items; there is no separate taxonomy as discussed above which can be collected into this area. More details on the specific use of this section are provided in the next chapter (see "Subtasks Template" under the DEVELOP feature).

- When done with a given record, or if no changes are needed to that record, press {F9} to move sequentially to the next record

Note: The last part of the template is a holding point for any notes you may want to make about a record. The notes are "localized" to this template and will not show up on screen or paper printouts.

- When done editing, press {ESC}

Caution

When you make edits to, say, a Collected list you may want to leave the "Master" list intact. However, edits to records in a COLLECTED list will also be made to those on the Master list having the same record key (with the exception noted just above in Special Sections of the Template). A solution to avoiding changes to the Master list is to create new record keys (thereby creating a new taxonomy) for your COLLECTED list. A convenient way to do this is to convert the file to ASCII and use your system editor or a word processing package to make the changes, then upload the "new" list to TWS. The tradeoff is that other information keyed to a given record key will no longer be related to the new record keys (e.g., Tasks which go with a given Mission) unless you Collect those Tasks and give them the new record ID as well. See the section in this chapter on Exporting TWS files, then the section in the next

Working with Lists—Maintenance

chapter on using the Import function for adding new lists to the TWS library

o List Maintenance

Adding or deleting records to a list requires updating procedures called List Maintenance (These procedures are not necessary for simply Collecting lists or just making edit changes to already existing records). Updating is required to relate record information with valid record keys (in fact, TWS will report a record as missing whenever it encounters a key without a related record). Maintenance involves a series of SSELECT and SAVELIST commands (via TCL) to those lists which are related to the records in question.

EXAMPLE 1. You add new records or delete existing ones from a task list of a taxonomy whose ORGNO is 300, say. You would at least need to update that task list. If it's name were TASKS.EXAMPLE, the two statements would be:

```
SSELECT TASKS WITH ORGNO = 300 {CR}  
SAVELIST TASKS.EXAMPLE {CR}
```

If you also made additions or deletions to subtask records within the same taxonomy (i.e., ORGNO 300), then

```
SSELECT SUBTASKS WITH ORGNO = 300 {CR}  
SAVELIST SUBTASKS.EXAMPLE {CR}
```

EXAMPLE 2. If the above taxonomy is for a given company and you have similar lists for different companies under different ORGNOS, you may want to have a glorified task list, for example, which contains all tasks of all companies in a given region of the country. Assume that the companies in question have ORGNOS 300, 301, and 302. To update this "master" regional task list:

```
SSELECT TASKS WITH ORGNO = 300 OR ORGNO =  
301 OR ORGNO = 302 {CR}
```

```
SAVELIST TASKS.REGIONA {CR}
```

If in addition you have an overall task list for all regions of the country (and the ORGNOS of the companies run from 300 to 309), then:

Working with Lists—Downloading with FILE Function

SSELECT TASKS WITH ORGNO BETWEEN 300 AND 309

SAVELIST TASKS.REGIONALL

Note: The use of Terminal Control Language (TCL) was introduced in the BROWSE chapter.

DOWNLOADING TWS LISTS

You may want to download a TWS list to ASCII for storage (filing) or processing, or to an applications package such as a word processor for specific work. TWS offers two main ways to do this:

o Using the FILE Function

FILE-PRINT of the TWS Main Menu will create ASCII files. The version generated by this procedure is formatted like the version you see when you call up the list from VIEW (i.e., organizational headers, etc. will be included).

- Choose FILE-PRINT from the Main Menu
- Select the type of list from the next menu
- Select the list name from the Directory
- Select {F} from the window query
- Specify the drive and path location for filing location; for example, to save TEST.LST within the AREV directory, you would type:

C:\AREV\TEST.LST

Caution

TWS will overwrite a file with a matching file name.

Accessing the File

To see the file after the FILE procedure has been performed, select ACCESS from the Main Menu, then DOS. At the DOS prompt (you are in the AREV directory at this point), enter

TYPE TEST.LST|MORE

To return to TWS, type EXIT at the DOS prompt

In addition to using this FILE feature for archiving, the ASCII file could also be accessed by another editor or word processing

Working with Lists--Downloading with EXPORT

package for processing (the above path would be specified to the package for location of the file). Remember, a list downloaded by the FILE function will be in the VIEW format.

o Using the EXPORT Template

The TRANSLATE feature of the Main Menu offers downloading functions of TWS files for LOTUS 123, dBase III, modem operations, and ASCII conversion. The ASCII feature will be demonstrated here. For information on the first two items, select one from the menu, and at the template, press {F1} for specific guidance. Use of the modem feature requires applications software and a short program written to the MODEM.BAT file in the AREV directory. Guidance is given in Appendix I, ACCESSING EXTERNAL APPLICATIONS PROGRAMS.

A special exporting feature for working with the modeling package MicroSAINT has been developed and its use is discussed in Appendix E.

Step 1: Create a Data Buffer File

- From the Main Menu, select EXIT, then AREV, then TOOLS, then FILES, then MAKE FILE
- Type BUFFER at File name prompt
- Type TWS at Volume prompt
- Press {F9}
- A buffer file is now attached to TWS; this procedure will not have to be performed for future export operations
- Make sure the data buffer is empty by entering TCL {F5}, typing CLEAR-FILE BUFFER {CR}, and Y {CR} at the query

Step 2: Create a Data Dictionary Buffer File

The proper data dictionary must be present in a buffer file, and the following steps need to be performed. If during your present TWS session you have already entered the steps below and want to export records of a similar type as before (e.g., Missions), skip this step. If you have set up a dictionary buffer for one type, say Missions, but now wish to export some of another, such as Subtasks, go to TCL ({F5}) and enter: CLEAR-FILE

Working with Lists—Downloading with EXPORT

DICT.BUFFER, respond {Y} {CR} to the query, then re-setup the buffer:

- From the Main Menu, select EXIT, then AREV, TOOLS, RECORDS, and RECORD Copy
- At Source file prompt, type DICT. followed by type of file being used (select from the menu obtained by pressing {F2}). For example, if your records involved Missions, the entry would be DICT.MISSIONS
- Type DICT.BUFFER at Destination file prompt
- Enter * at Source Record(s) prompt
- Use down arrow to move to Option(s) field
- Press {A}, immediately followed by {F9}
- Use the same Menu selections as in Step 2 (EXIT, then AREV, TOOLS, RECORDS, & RECORD COPY)
- Information regarding the template for this part of the EXPORT procedures is available by pressing {F1}
- At Source file prompt, enter the type of file that contains the records to download (e.g., Missions, Tasks, Subtasks). The choice must be from the menu obtained by pressing {F2} while at this template location
- Type BUFFER at Destination File prompt
- Press {CTRL} {F10} at Source record(s) prompt
- Make selection 3 (GETLIST), {CR}
- Enter the list name of the file you want to download
- Press the down arrow to get to the Options(s) prompt
- Press {A}, immediately followed by {F9}

Step 3: Prepare the Recordcopy Template for the File to be Exported

Working with Lists--Downloading with EXPORT

Step 4: Prepare the EXPORT Template

- Return to the TWS Main Menu ({ESC}) and select TRANSLATE, then ASCII. Choices for each section of the template are available by placing the cursor on a given line, then pressing {F2}; general information on the template itself is available at {F1}.
- At the Process name prompt of the template enter the type of file name used for the Source file prompt above, followed by .ASCII (e.g., MISSIONS.ASCII; TASKS.ASCII; the choice must be from the list at F2)

(Note: If you enter a Process name for a previously created template, those parameters will appear; additionally, TWS supplies suggested parameters for Abilities, Skills, & Functions)

- For DOS file name, enter a desired name, such as MISSION.ASC. Specify a path if desired; the default location will be the AREV directory (see {F2})
- Enter BUFFER for Revelation file name
- Enter 32 for Field delimiter (signifying a space between fields; you could enter a 44 here to get a comma, e.g., between fields--see info at {F2}); 13,10 at the Record delimiter prompt; and 26 at the End-of-file prompt (26 gives a CTRL Z)
- Scroll down to Field Name, and type @ID {CR} {CR} {CR} followed by the appropriate name(s). For this section of the template, the source for names is from the Dictionary. Press {F5} for TCL, and type LOOKDICT followed by a filename such as MISSIONS, TASKS, SUBTASKS, etc. Press {ESC} to return to the template. @ID indicates that you want the record key downloaded; if your records pertain to Missions, and you type Mission below the @ID entry, then the mission descriptions (titles) are downloaded as well. You therefore control what information is sent. Note that if your file involves a special taxonomy such as Abilities, say, each separate Ability represents a field, and each field you want downloaded must be listed (e.g., A1, A2, A3, ...)

Working with Lists—Duplicating & Printing

— Press {F9} and {Y} {CR} to query

(Note: If you are exporting to a DOS file name which already exists, the program will ask whether or not you wish to proceed)

The ASCII file is now located per the specifications given to "DOS file name" of the template. Options for accessing it are: (1) selecting ACCESS from the Main Menu, then DOS. (2) EXIT from the Main Menu, then SUSPEND, then call up an applications package to process the file. (3) ACCESS followed by the appropriate package selection if you have previously set up a .BAT file (see the section below in this chapter titled Access to Applications Packages). Note that the downloaded file has a space between fields if you entered the "32" parameter at the Field delimiter section of the template. A "44" would have inserted a comma.

DUPLICATING LISTS WITHIN TWS

Using the TCL {F5} mode, you can duplicate a list by copying it to a new name. Assume you have a list with the file name TEST.LIST.A and you want to create the same list with the name TEST.LIST.B. You can duplicate it by using the COPY LISTS command:

```
COPY LISTS TEST.LIST.A TO: (LISTS TEST.LIST.B  
{CR})
```

The newly created list can be assigned to the appropriate Directory by performing the steps outlined in the earlier section in this chapter on building lists using TCL.

PRINTING LISTS

- o Use the FILE-PRINT Feature for Structured Reports

The FILE-PRINT Main Menu feature also allows you to print files in the report format as seen in VIEW. Reports can be printed to HP Laser Jet II, Epson or IBM printers, or compatible clones.

To print, select the {P} option ({F} is for filing lists)

Working with Lists—Printing

"Hang-up" note:

Whenever DOS encounters a disk drive that is not ready, a printer that is not turned on or one that runs out of paper, or any number of other everyday events, DOS prints out a variety of messages, all of which end with the phrase: "Abort, Retry, or Ignore." Usually you are forced to reboot your system and start over again; AREV has overcome this problem. The solution is to press {A} until an exclamation point (!) appears; then type END, followed by a {CR}. You will be returned to TWS.

- o Use TCL for Unstructured Reports

For some printing needs, you may not want the structured format that PRINT above provides. To obtain a straight listing of records (i.e., a format compatible with SCAN):

- Enter TCL {F5}
- Type GETLIST LISTNAME, where LISTNAME is the name of the list you want to print
- Type LIST FILENAME (P), where FILENAME corresponds to the type of record (e.g., Missions, Tasks, Subtasks, etc.)

The (P) option in the statement above causes the list to be printed

- o Use the EXPORT Feature for ASCII Conversion

The EXPORT option of the TRANSLATE feature of the Main Menu converts files to ASCII. Using a systems editor or a word processing package you could then customize the format and print the report under external control. This feature is covered in this Chapter under the heading Using the EXPORT Template. Note that you can download whichever fields you want using the template feature.

Working with Lists--ACCESS

ACCESS TO APPLICATIONS PACKAGES

To access a downloaded file for processing outside of TWS, you could select EXIT from the Main Menu, then DOS to work with your systems editor for example. To work with a file via word processing software, you could select either the LOGOFF or SUSPEND options from EXIT, then call up your package from DOS. Access to applications packages can be made considerably easier by invoking the functions of the ACCESS feature of the Main Menu. Simple programs can be easily written to .BAT files which then allow "one touch" access. Details are provided in Appendix I, ACCESSING EXTERNAL APPLICATIONS PROGRAMS.

Entering New Taxonomies

ENTERING NEW TAXONOMIES

OPTIONS FOR INPUT

Procedures for making new lists from existing ones were described in the chapter on WORKING WITH LISTS: the COLLECT function and Terminal Control Language (TCL) allow easy construction of specialized lists. This chapter deals with the creation of lists from "scratch". Lists can be developed off line (1) using the MS DOS system editor (EDLIN command), (2) using a word processing package and converting the file to ASCII format, or (3) using the DEVELOP feature of the TWS Main Menu. ASCII files would be entered into TWS via the IMPORT function, whereas DEVELOP represents direct on-line TWS building of the taxonomy.

Once a taxonomy is created and is a formal part of TWS, all the functions described in the BROWSE and WORKING WITH LISTS chapters are then available for use

EXAMPLE TAXONOMY

To illustrate the procedures for creating new taxonomies, a general example will be used. The layout is shown in Table 2.

It is important that records created off line and imported from ASCII format, have the proper delimiters. The (*) is the system join character that TWS uses to build concatenated record keys. TWS reads a concatenated record key using the following syntax (the concept of the record key was discussed in example SCAN.1 of the BROWSE chapter):

ORGNO*MISSIONID*TASKNO*SUBTASKID

ORGNO must be a number, MISSIONID is set up to accept upper-case letters, TASKNO to accept a number, and SUBTASKID to accept lower-case letters. If these defaults are unacceptable for your needs, instructions to make changes in the record key formats are provided in Appendix J.

Note 1: If your taxonomy is lengthy, the system will accept double letters, such as BB or aa.

TABLE 2

Functional Layout of Departments, Branches, and Sections for ACME
Company Example of Taxonomy Entry

A Product Development Department

- 1 Planning Branch
- 2 Production

B Marketing

- 1 Projections
 - a Trend Projections Section
 - b Market Projections
 - c Sales Projections
- 2 Sales
 - a Current Accounts
 - b New Accounts

C Finance

- 1 Billing
- 2 Disbursing
 - a Payroll
 - b Accounts Payable
- 3 Budget

D Administration

- 1 Personnel
 - a Employee Records
 - b Appraisals
 - c Training
 - d Recruitment
- 2 Operations

E Data Processing

- 1 Information Management
 - a Payroll
 - b Employee Records
 - c Budget
 - 2 System Support
 - a Software
 - b Hardware
-

Entering New Taxonomies—ORGCHART

Note 2: Although not required for the sample taxonomy, if Elements are to be associated with Subtasks (making the taxonomy a 4-level affair—Missions/Tasks/Subtasks/Elements), they can be entered via the two main functions discussed in this Chapter for creating taxonomies: the IMPORT and DEVELOP features.

For the sample taxonomy used here, the ORGNO will be 300, Departments are equivalent to Missions, Branches to Tasks, and Sections to Subtasks. Thus, record ID 300*E*2*a refers to the Software Support Section of the System Support Branch of the Data Processing Department of the ACME Company.

ORGANIZATIONAL CHART SETUP

There is an organizational breakdown at the top of every printed TWS task inventory and task analysis report. This breakdown describes the system that is being analyzed to a depth of four levels. Each of these levels contains both a classifying title and the system name drawn from the class. This header is related to the ORGNO through cross indexed information stored in the files ORGCHART and SYNONYMS. For Example, an ORGNO = 1 causes the following header to be printed:

- o Organizational Breakdown Shown in Report Headers

MACOM:	COMBAT ARMS
BRANCH:	INFANTRY
UNIT:	BATTALION
FUNCTION:	COMMAND AND CONTROL

The titles to the left of the colons are organizational classes. The titles on the right are the names of the organizations being analyzed. The ORGCHART levels for TWS-supplied taxonomies were outlined in Appendix G. All of this information is coded to ORGNO, through cross reference to ORGCHART and SYNONYMS.

- o Step 1:
Create
Synonyms

The first procedure for new taxonomies is to set up the Synonyms for names and class titles.

Entering New Taxonomies—ORGCHART

- From the TWS Main Menu, select DEVELOP, DATA BASE STRUCTURE, SYNONYMS
- {F1} provides a help menu for this template
- Because an ORGCHART consists of 4 levels, this window will be completed 4 times; press {F9} after each completion. The

information which is entered should be anything relevant to the taxonomy. For the sample taxonomy, fill in the template using the following data from each row:

<u>Label</u>	<u>Definition</u>	<u>Class</u>
ACME	ACME High Tech, Inc.	Company: {F9}
NE	Northeast	Region: {F9}
AV	Audio-Visual Equipment	Function: {F9}
YR	1989	Year: {F9}

- After the 4th entry is saved, press {ESC} to return to the Main Menu

o Step 2:
Create the
Data Base
Organization

To set up a new data base, you must select a unique and unused ORGNO. The organizations supplied with the TWS are shown in Table 3; this ID information is also available by selecting SCAN/ORGCHART/ALL.ORGANIZATIONS or VIEW/STRUCTURE/ORGCHART/ALL.ORGANIZATIONS. The terms you defined using the synonym entry chart above will be related to the ORGNO using the ORGCHART Entry program of this subsection. In this way, total organizational information for each record is accessible via the ORGNO.

- From the Main Menu, select DEVELOP, DATA BASE STRUCTURE, and ORGCHART
- At the ID prompt enter 300
- For the 4 levels, enter the 4 Labels from above (because upper case letters were used for the Synonym template, use them here as well)
- Press {F9}

Entering New Taxonomies--Importing

- At the ID prompt, reenter 300. The ORGNO information attached to the labels for this ORGNO now appears in the "Create Organization Structures" window
- Corrections to the Labels, Definition, or Class can be made by returning to the Synonym entry template (DEVELOP/DATA BASE STRUCTURE/SYNONYMS) and entering the Label name (e.g., ACME). Make changes by placing the cursor on the appropriate line, then proceed with you edits, pressing {F9} when done

o Step 3:
Update the
Master Syn-
onym & ORG-
CHART Lists

These new entries should be updated to the master Synonym and ORGCHART lists by using List Maintenance procedures:

- Enter TCL by pressing {F5}
- Type SSELECT SYNONYMS
- Type SAVELIST ALL.SYNONYMS
- Type SSELECT ORGCHART
- Type SAVELIST ALL.ORGANIZATIONS

Call up these lists in either SCAN or VIEW to see the updates. Keeping the ORGCHART list updated is essential to avoiding the duplication of ORGNOs.

OFF LINE CREATION
& IMPORTING

In addition to using the * as the join character in your record keys, off-line records need a field delimiter (use the comma (ASCII 44 Dec), end of record characters {CR} & {LF} (ASCII 13,10 Dec), and end of file character {SUB} (ASCII 26 Dec). Thus, a subtask entry would look as follows:

300*B*1*a,Subtask title

Note: Although the example in Table 6 does not include Elements with the Subtasks, if you are creating a taxonomy which requires this fourth level, the procedures outlined in Appendix K should be followed for the importing of the Subtask list.

Entering New Taxonomies—Importing

Although options are available for the field delimiter, the use of the comma is strongly advised. For the sample taxonomy, three lists will need to be created, one each for Departments, Branches, and Sections.

Once your taxonomy is ready and has been converted to ASCII, follow the procedures in the IMPORTING section below for uploading the files into the TWS.

Importing Alert: Some users have reported unsuccessful importing of lists which contain subtasks. The problem was quickly solved when the code for each subtask was changed from a lower case to an upper case letter. From the example on the previous page, the change would be: 300*B*1*A, Subtask title

o Importing Files to the TWS

Just as files can be exported from TWS to Lotus 123, dBase III, and ASCII, so too can they shipped from these sources to the TWS. This section will illustrate the procedures for ASCII. Information on the packages is available by choosing TRANSLATE from the Main Menu, then IMPORT and the specific selection, followed by pressing {F1}.

Step 1: Create a Data Buffer File

If you have not already done so for exporting operations, perform the steps below for the data buffer file:

- From the Main Menu, select EXIT, then AREV, then TOOLS, then FILES, then MAKE FILE
- Type BUFFER at File name prompt
- Type TWS at Volume prompt
- Press {F9}
- A buffer file is now attached to TWS; this procedure will not have to be performed for future import operations

Step 2: Create a Data Dictionary Buffer File

The proper data dictionary must be present in a buffer file, and the following steps need to be performed. If during a given TWS session (i.e., before logging off) you have already entered the steps below and want to import records of a similar type as before (e.g., Missions), skip this subsection. If you have

Entering New Taxonomies--Importing

set up a dictionary buffer for one type, say Missions, but now wish to import some of another, such as Subtasks, then first go to TCL ({F5}) and enter: CLEAR-FILE
DICT.BUFFER, respond {Y} {CR} to the query, then re-setup the buffer:

- From the Main Menu, select EXIT, then AREV, TOOLS, RECORDS, and RECORD Copy
- At Source file prompt, type DICT. followed by type of file being used (select from the menu obtained by pressing {F2}). For example, if your records involved Missions, the entry would be DICT.MISSIONS
- Type DICT.BUFFER at Destination file prompt
- Enter * at Source Record(s) prompt
- Use down arrow to move to Option(s) field
- Press {A}, immediately followed by {F9}

Step 3: Prepare the IMPORT Template

From the Main Menu select TRANSLATE, IMPORT, and ASCII. The procedures for filling out the template are similar to those listed in the EXPORT section of the previous chapter ("Prepare the Export Template"). The steps are listed below. Again note that you control which fields are involved in the translation

- Choices for each section of the template are available by placing the cursor on a given line, then pressing {F2}; general information on the template itself is available at {F1}.
- At the Process name prompt of the template enter the type of file name used for the Source file prompt above, followed by .ASCII (e.g., MISSIONS.ASCII; TASKS.ASCII)

(Note: If you enter a Process name for a previously created template, those parameters will appear; additionally, TWS supplies suggested parameters for Abilities, Skills, & Functions)

Entering New Taxonomies—Importing

- For DJS file name, enter the name under which the new taxonomy is filed, for example, MISSION.ASC (give its location if it is not stored within the AREV directory)
- Enter BUFFER for Revelation file name
- Enter 44 for Field delimiter (signifying a comma between fields); 13,10 at the Record delimiter prompt; and 26 at the End-of-file prompt (for CTRL Z character)
- Scroll down to Field Name, and type @ID {CR} {CR} {CR} followed by the appropriate name(s). For this section of the template, the source for names is from the Dictionary: Press {F5} for TCL, and type LOOKDICT followed by a filename such as MISSIONS, TASKS, SUBTASKS, etc. Press {ESC} to return to the template. @ID indicates that you want the record key uploaded; if your records pertain to Missions, and you type Mission (note the use of the singular here, as shown in the listing to the LOOKDICT MISSIONS command) below the @ID entry, then the mission descriptions (titles) are uploaded as well. You therefore control what information is sent. Note that if your file involves Abilities, say, each separate Ability represents a field, and each field you want uploaded must be listed (e.g., A1, A2, A3, ...)
- Press {F9} and {Y} {CR} to queries

To check for accuracy of the importing operation, press {F5} for TCL, and type LIST BUFFER name {CR}, where name = type of file, e.g., MISSION, TASK, SUBTASK

Step 4: Completing the Transfer with Record- copy

- From the Main Menu select EXIT, AREV, TOOLS, RECORDS, and RECORD COPY.
- At Source file prompt, type BUFFER {CR}
- At Destination file enter the type of records (e.g., Missions) {CR}. You must choose from the list given at {F2}
- Press {F2} at the Source records prompt

Entering New Taxonomies—Importing

- Select all the BUFFER records by pressing {CR} for each one (the line will be highlighted), including the last entry (i.e., the cursor scrolls back to the top line), then press {F9}
- Press {CR} repeatedly, transferring record keys to the destination record(s) prompt
- When the cursor moves to the Option(s) prompt, enter {A}, immediately followed by {F9}

Step 5: Place List on Directory

The imported records are in the BUFFER. To make and save a list of the records, perform the following List Maintenance steps in TCL:

SSELECT BUFFER

Then do a SAVELIST command using either one of the Methods below:

Method 1:

- Type SAVELIST ACME.DEPT
- From the Main Menu, select DEVELOP, then DATA BASE STRUCTURE, then INDEX LISTS. For Missions (Departments), scroll to the Missions line and press {CR}. Place the name of the list, ACME.DEPT, at the desired spot below the line (a blank line for insertion can be made by pressing {CR} with the cursor one line above the desired location; {CTRL} {D} will delete the entry the cursor is on). Press {F9} then {ESC}
- Call up the INDEX LISTS menu again and repeat for the addition of ACME.BRANCH; repeat for ACME.SECT

Method 2:

- In the "List Maintenance" section above, instead of saving the missions list to ACME.DEPT after doing a SSELECT, save it to MISSION.COLLECTOR.LIST {CR} (i.e., a list already on the Directory). Press {ESC}
- From the Main Menu, select COLLECT, then MISSIONS, and finally MISSION.COLLECTOR.LIST

Entering New Taxonomies--Develop

- Collect all the items, press {F9} twice
- Press {N} to the query
- Now enter ACME.DEPT. Press {ESC}
- For Tasks, after SSELECT BUFFER, save the list to TASK.COLLECTOR.LIST, and proceed as above. For SUBTASKS, save the list to SUBTASK.COLLECTOR.LIST

The first method demonstrates the use of the INDEX LISTS feature; Method 2 illustrates the use of the COLLECTOR function. Both these techniques were introduced in the previous chapter.

USING THE DEVELOP FEATURE OF THE MAIN MENU

Most of the DEVELOP entry programs are essentially forms to be filled in. This template approach to taxonomy building allows you to get the most out of the TWS. Each entry line is prompted with the cursor; when you complete the entry, you press {CR} to continue on. When you have completed the record form, you use {F9} to save it.

Each Mission/Task/Subtask record entry form prompts you at every line. The help screens are available extensively throughout the program.

The Develop option unfolds to three task analysis headings (Data Base Structure; Inventory Analysis; Additional Scales) which, in turn, unfold another time. Most of the selections are the same name as those for Scan and Collect. Again, just as for off-line created lists, three sets of lists will need to be created using the DEVELOP feature: Departments, Branches, and Sections

o Mission Template

- To build the DEPARTMENT records, which are equivalent in the sample taxonomy to MISSIONS, one would choose DEVELOP from the Main Menu, then INVENTORY ANALYSIS, and finally MISSIONS
- For each of the 5 Departments in this example, an Enter Template would be completed. Enter 300 {CR} for the ORGNO, then {A} {CR} for Mission ID. The

Entering New Taxonomies—Develop

organizational information which you previously entered then appears. At the Mission prompt enter the title of Department A, that is, Product Development

- The next 2 parts of the template (Conditions & Function Expansion) were built for linking information from the respective taxonomies (see Table 1 for details) with military mission scenarios. However, any information can be entered. It will appear on VIEW screen print outs and paper print outs generated by the FILE-PRINT feature of the TWS Main Menu. Entries are not required, however

Note: When linking either the Conditions or Function taxonomies is applicable, the following easy steps will invoke a powerful feature:

- When the cursor is in either area, press {F6} to call up a Collector Menu. For Conditions, for example, select "Condition Collector."
- Select "All.Conditions" or "Condition.Classes" as appropriate
- Select the items you want in the desired order by cursoring to each row and pressing {CR}
- When done selecting, press {F9}. The selections then automatically appear in the Conditions segment of the template (Any information which is currently in that section will be overwritten)
- If you wish to make any additions, deletions, or changes, press {F3} and perform your editing. Then press {F9} to save, followed by {ESC} (This {F3} step is required for ease in editing of info in the special template sections)
- The last part of the template, "TWS Note:" allows you to make notes about a given Mission (Department); the notes appear only on this template and not on screen or hard copy print outs. Entries are not required

Entering New Taxonomies—Develop

- When finished with a given template, press {F9} to save the information
- Enter data for the next Department (B), and proceed as above
- o Task Template
 - After the last Department data have been entered, press {ESC}, then select TASKS from the INVENTORY ANALYSIS menu
 - Enter 300 for ORGNO {CR}, {A} {CR} for Mission ID, and 1 {CR} for Task No. Headers and the Department title appear. Type in the first Branch for the Product Development Department, that is, Planning {CR}

Note on Synonym section of template: The military taxonomies operate on a verb-first format for Mission, Task, and Subtask titles. Such a structure allows for important kinds of record analyses. For example, in TCL a list of all Mission records which begin with the word Defend could be easily obtained by the query command:

LIST TASKS WITH TASK 'DEFEND']'

(Query statements were first introduced in the Browse chapter)

Verb-first format is not a strict necessity for taxonomy development. But using a consistent nomenclature can be handy for record processing of long lists. You can define key initial words by selecting the DEVELOP/DATA BASE STRUCTURE/SYNONYMS menus, and proceeding as before (see the subsection on setting up the organizational labels for this example taxonomy)

If the first word of your Task title matches a TWS-supplied Synonym Dictionary entry, or if you make a Synonym Dictionary entry per the above paragraph, the first 15 letters of the definition will appear after you enter the Task title. You can change an existing definition by going to the Synonyms Enter-Edit window (accessed by the menus listed immediately above). You can change any entry that appears on the Synonym line of the Task template simply by editing it.

Entering New Taxonomies—Develop

- CRIT CAT is a required entry. This Critical Category entry can be used to reflect the importance of a given entry. The acceptable range is 1 to 4. If it is of no use for a particular application, you could enter the same number (e.g., 1) each time
 - PARAMETERS is intended for correlation of that taxonomy with Tasks (use the {F6} feature as previously explained. However, it can be used just like the Conditions and Function Expansion segment of the Mission template to be application-specific to your needs. Entry is not required
 - TWS Note is as discussed under Mission template
 - When entry is completed for a given Task, press {F9}
 - When all Tasks (Branches) have been entered, press {ESC}
 - o Subtasks Template
 - Select SUBTASKS from the INVENTORY Menu
 - Enter 300 {CR}, {B} {CR}, 1 {CR}, and {a} {CR} to set up the first Section (Department A is not entered because no sections are listed under Branches 1 or 2 of that Department—see Table 2). Enter a title (Trend Projections) {CR}
 - The Element section of the template is conceptually like the Parameters, Conditions, and Function Expansion sections of the previous templates. Again, no entry is required. Although there is no Element taxonomy per se from which you choose items as you could, for example, with Parameters, this section offers a powerful feature because of the details which can be tied to the Subtask level. "Elements" essentially represents a 4th level in the taxonomic structure (Missions, Tasks, Subtasks, Elements)
- Elements are entered and edited from this section of the template ({CIRL}-{F3} is not required for editing here). If Subtasks have many Elements which are similar, they

Entering New Taxonomies—Develop

can easily be added to other Subtasks via the following procedures:

- After typing in Elements for one Subtask, put the cursor on the 1st line of Element information you want to be duplicated
- Press {CTRL}-{B} to define the start of the block
- Use the down arrow to define the rest of the block
- Press {CTRL}-{B} to define the end of the block. Press {CTRL}-{F3} to cut the block. The information remains in its original place but now also resides in a buffer memory
- Move the cursor to wherever you want the information to be copied, then press {CTRL}-{F4} to paste the block. Once copied, you can then do any necessary edits for that particular Subtask. The same block can be copied to multiple locations until new information is placed in the buffer
- Press {F9} after the information for each Subtask has been entered
- Press {ESC} when finished
- o List Maintenance
 - Enter TCL via {F5}
 - Update each of the three list types (Departments, Tasks, Subtasks) by performing a SSELECT and SAVELIST command):

```
SSELECT MISSIONS WITH ORGNO = 300  
SAVELIST ACME.DEPT
```

```
SSELECT TASKS WITH ORGNO = 300  
SAVELIST ACME.BRANCH
```

```
SSELECT SUBTASKS WITH ORGNO = 300  
SAVELIST ACME.SECT
```

Note: If the list name in the SAVELIST statement already exists, the new information will overwrite the old.

Entering New Taxonomies—Cross-Linking

- o Place List on Directory Use either of the 2 Methods described in the section of this chapter on "Importing files to TWS."
- o BROWSE and WORK with the Lists All capabilities discussed in previous chapters are now available for this taxonomy. BROWSE through the lists in SCAN or VIEW (if the latter, note that any information you may have added in the special template sections will show on the screen); PRINT then; or EDIT them (add, delete, or change record information)
- o CROSS-LINKING A useful capability of TWS is to cross-link information from one taxonomy with another. This linkage was discussed in the earlier chapter "Browsing through the TWS Library". For example, cognitive functions in the REPERTORIES taxonomy are linked with Tasks; the Cognitive Abilities taxonomy is linked with Subtasks, as is the Cognitive Constructs taxonomy. Two Skills taxonomies are linked with the Field Test Task Analysis. Each item of the skill or ability taxonomy is linked by virtue of a 0 or 1 to indicate whether it is needed to perform a given Task or Subtask. This kind of information can be linked to new taxonomies which you create by selecting DEVELOP/ADDITIONAL SCALES, followed by ABILITIES, SKILLS, or REPERTORIES (depending on whether the linking is at the Task or Subtask level). Completing the templates is very easy: after filling in the top row information, enter a {1} {CR} or {0} {CR} when the cursor appears over each ability or skill item (actually you have the option of using a code set of any particular meaning to you; the entries are not limited to 0 or 1, but they must be numbers).

Press {F9} to save the information when done with the template. Then, perform list maintenance. Using the example from the previous page:

```
SSELECT ABILITIES WITH ORGNO = 300
SAVELIST ACMESECT.ABIL
```

Place the list on the Abilities directory per previous instructions.

Entering New Taxonomies—Custom

BUILDING CUSTOM TAXONOMIES

Assume that linkage of skill or ability information is not relevant to the example ACME taxonomy. Rather, you want to link an Inventory Taxonomy of major office equipment which is assigned to each Branch. TWS provides you with the capability to build Customized Taxonomies using a set of Generic tools. These include:

- Generic taxonomy file
- Generic Entry-Edit program
- Generic Scanner
- Generic Collector
- Two Generic View Reports
- Two Generic File-Print Reports

The main function of this Generic feature is the easy linkage of application-specific information from the custom-built taxonomy with another taxonomy. Linkage must always be to the Task level. This function will be illustrated here.

The Develop procedures will be shown for the Inventory Taxonomy in Table 3. Note that the entries are the number of pieces of equipment tied to a given Branch area (versus a 0 or 1 for the ability and skill taxonomies).

- o Step 1:
Set up the
Synonyms

- Select DEVELOP, then DATA BASE STRUCTURE, then SYNONYMS. Fill out a template for each row below, then press {F9} to save the information and receive a new template

<u>Label</u>	<u>Definition</u>	<u>Class</u>
300.TAX1	PC	
300.TAX2	M-FRAME	
300.TAX3	TYPWRIT	
300.TAX4	CON-TBL	
300.TAX5	RCD-FRM	
300.TAX6	CO-CAR	
300.TAX7	SHIP-TLS	
300.TAX8	LIBE	
300.TAXTITLE	EQUIPMENT INVENTORY	

TABLE 3

Inventory Table of Major Pieces of Office Equipment Assigned to each Branch of the ACME Company

Branch	PC	M-Frame	Typwrit	Cnf-Tbl	Rec-Frm	Co-Car	Shp-Tls	Libe
A 1	9	0	3	1	0	0	0	0
A 2	0	0	1	0	0	0	1	0
B 1	14	0	0	0	0	0	0	1
B 2	7	0	2	0	0	0	0	1
C 1	0	1	8	0	15	0	0	0
C 2	0	1	5	0	13	0	0	0
C 3	0	1	3	0	8	0	0	0
D 1	3	0	2	0	5	0	0	0
D 2	3	0	1	1	0	2	0	1
E 1	5	1	0	1	11	0	0	1
E 2	5	1	0	0	9	0	0	1

Abbreviations: PC = personal computer; M-Frame = main frame computer; Typwrit = typewriter; Cnf-Tbl = conference table; Rec-Frm = (types of) record forms; Co-Car = company car; Shp-Tls = (types of) shop tools; Libe = (specialized) library.

Entering New Taxonomies—Custom

Notes: (1) The first part of the label refers to the ORGNO of the taxonomy you want to link up; the second part of the label must be in caps. (2) Seven letters of the Definition are printed to the screen and therefore abbreviations are suggested. (3) The limits of elements to the Generic taxonomy is eight. If your special taxonomy has less than 8 elements, fill out the label part and type three dots {...} in the Definition line. The .TAXTITLE is required.

- o Step 2:
Update the
Synonyms
 - Press {F5} for TCL
 - Type SSELECT SYNONYMS
 - Type SAVELIST ALL.SYNONYMS
 - Press {ESC}
 - Select the VIEW/STRUCTURE/SYNONYMS menus
 - Select ALL.SYNONYMS
 - Scroll to the 300 section and check your entries (Changes can be made by going through the procedures in the above subsection)
 - Press {ESC} and return to the Main Menu
- o Step 3:
Enter the
Data
 - Select DEVELOP, ADDITIONAL SCALES, GENERIC
 - Enter the appropriate codes for ORGNO, Mission (Department) and Task (Branch). Type the appropriate number of pieces of equipment for each item of the Inventory taxonomy and press {CR} after each. Add a TWS note if desired. Press {F9} to save the information and get a new template. Press {ESC} when done
- o Step 4:
List Main-
tenance &
Directory
Update
 - Press {F5}
 - Type SSELECT GENERIC WITH ORGNO = 300 (Note: GENERIC is a constant in this expression; 300 is the appropriate ORGNO for this example)
 - Type SAVELIST EQUIP.INV (use any name you want). Press {ESC}

Entering New Taxonomies—Custom

- Select DEVELOP from the Main Menu, then DATA BASE STRUCTURE, then INDEX LISTS
- Select Generic, and enter EQUIP.INV at a desired location. Press {F9}, then {ESC}

o Call up the Linked Taxonomies

The many ways to browse through lists are now available. Specifically for Generic linkages, the following menu selections are appropriate:

VIEW/ADDITIONAL SCALES/GENERIC/EQUIP.INV

VIEW/ADDITIONAL SCALES/GENERIC II/EQUIP.INV

The SCAN feature is available as well, as is the PRINT function.

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APPENDIX A
DATA BASE MANAGEMENT SYSTEMS

APPENDIX A

DATA BASE MANAGEMENT SYSTEMS

One of the most useful features of the PC is its ability to handle large sets of similar data called data bases. Some everyday examples of data bases include mailing lists, personnel files, parts catalogs, and duty rosters. The PC can simplify the typing, indexing, storage and retrieval of this kind of information, and it can rapidly collate and sort the information into printed reports. The computer programs that are designed to handle data bases are collectively called data base management systems (DEMS). In the world of personal computing, as differentiated from minis and mainframes, there are three basic types of DEMS; flat-file data bases, relational data bases and programmable relational data bases.

Flat-File Data Bases

The flat-file DEMS program is little more than a form filer that helps the user create and fill out formatted forms, sort the forms using one or more cross indexed records, and then print out collections of forms or compiled reports that total the information contained in a selection of forms. These programs are called flat-file managers because they offer access to the contents of a single file. Flat-file managers are used extensively in every day applications such as appointment calendars, equipment inventories, mailing lists etc. Well designed flat file managers are simple to learn, easy to use and they fill many data base needs. Perhaps the best manual analogies to the flat-file manager are the office roladex and library card catalog.

Relational Data Bases

In the parlance of PC users, any DEMS that can draw information from more than one file at a time is a relational database. The records in a relational data base are said to be related when they contain a common data item. In relational data bases, the information is separated into several files according to the functional uses of the file. For example, the accounting information for a parts store might be separated into a customer file, a vendor file, a parts inventory file, an accounts receivable file, an accounts payable file, a general ledger file and others depending on the business. Using this system, a clerk could ring up a sale to a customer by entering the customer's name and the part number. The data base would use these two fields to look up the related information in the files. Using the customer name, it would search the customer file and automatically print an invoice header with the customer's name, address, business phone number, and account number. The data base would then look up the inventory record using the part number and print the part

description, current price, and discount on the invoice. The sale would be added to the customer's accounts receivable file, the transaction would be posted to the general ledger, the inventory stock would be decremented and if it dropped below a preset level, the system would place an automatic order for the predetermined number of parts.

The simple relational data base is best used in applications that are composed of linked forms. In these applications each type of form constitutes a data base file. The forms should be fairly uncomplicated and the information content of each form should be preformatted, that is, the record fields on the forms should be of fixed length and set information format. The best uses for simple relational data bases is in point of sales business applications, equipment maintenance and repair, inventory control and similar applications.

Programmable Relational Data Bases

The most flexible type of relational DEMS program available for the PC is called the programmable relational data base. These systems offer a wide variety of features. They all have a data base programming language and they may offer a natural language query system or SQL, and an automated applications generator. When comparing the DEMS programs that have all of these features, you will discover that they vary primarily in speed of operation and the maximum number and size of fields, records, and files that a single application may contain or access. The advantage of a programmable relational data base is that it provides the programming tools to develop highly structured and customized applications that meet all of the foreseeable needs of the user, while providing the user with the capability to perform free form queries of the data base, and generate new reports and applications that are found to be useful after the data base is put into use. This feature prevents the application from becoming obsolete over time by providing the user with the capability to continually develop the data base to meet changing information needs.

The programmable relational data base is best used in applications where data flexibility, free form queries, processing speed and custom design are the key requirements. These data bases are best suited to the development of general use systems. Some examples would include a training data base to develop Skill Qualification Tests, an Army Training and Evaluation Program (ARTEP) data base and of course the Taxonomic Work Station for generalized human factors task analysis. In all of these cases the key requirement is on data input and output flexibility and the capability to adapt to new requirements over time. At the time the TWS was designed, there were over 40 programmable relational data bases available for the PC; perhaps the most widely used application was dBase III. Because of its development history, dBase III is best

suited to fixed format applications. It has a rigidly formatted and limited file structure that is ideally suited to predefined form based systems, such as accounting, personnel, and equipment inventory management systems. The form oriented structural limits placed on field, record and file size make dBase III an impractical choice where highly variable data structures are desirable. Advanced Revelation was selected for the development of TWS because it is based on the concept of a dynamic string, in which field, record, and file sizes do not have to be specified when the data base application is designed. In operation, the actual size of these objects is determined by the data they contain, therefor Advanced Revelation is best used where field, record and file sizes are either unknown when the application is designed or when the sizes of these objects is expected to vary widely over time.

APPENDIX B
DELETING TAXONOMIES

APPENDIX B

DELETING TAXONOMIES

- o Purpose is to Free Up Hard Disk Space
- In the chapter on Working with Lists, a form of deleting lists was shown using the COLLECT function—that is, call up a list, collect no records to the list, then save the "list" under the same list name. This technique does not remove the records from the hard disk. In order to delete lists with the intention of freeing up hard disk space, the following procedures should be performed:

- o Step 1: Select & Delete from TWS
- In TCL {F5} identify the lists set for deletion. For example, you can define a specific list or a set of lists using the SELECT statement:

```
SELECT TRANSPORTATION.MISSIONS
SELECT MISSIONS WITH ORGNO BETWEEN 1 AND 22
```

Specific list names are obtained from the Directories accessed from SCAN

- Each SELECT statement is followed by a DELETEREC (delete records) statement:

```
DELETEREC MISSIONS
(this statement would be used for either of
the two SELECT statements shown above)
```

- Repeat the SELECT and DELETEREC procedures for TASKS and SUBTASKS as required
- Exception: the taxonomies of skills and abilities can be deleted in a single step by using the CLEARFILE statement:

```
CLEARFILE ABILITIES
CLEARFILE SKILLS
CLEARFILE REPERTORIES
CLEARFILE CONSTRUCTS
```

- o Step 2: Delete from AREV
- {ESC} from TCL, and select EXIT from the TWS Main Menu, followed by AREV, TOOLS, RECORDS, and DELETE RECORDS
 - Type LISTS in the file name field, and press {F9}

Deleting Taxonomies

- Press {F2}. At the Collector window, select the lists you want to delete (use {CR}), then press {F9}. You will return to the Delete record window
- Press {F9} to delete the lists you just selected in the Collector window
- Press {ESC} when done
- o Step 3:
Delete the
List Name
from the
Directory
 - Select DEVELOP from the TWS Main Menu, then DATA BASE STRUCTURE, AND INDEX LISTS
 - Make the appropriate selection of file type, then delete the list name(s) by placing the cursor on it, and pressing {CTRL}-{D}. This procedure deletes the list name from the applicable Directory

APPENDIX C
PURCHASING ADVANCED REVELATION

APPENDIX C

PURCHASING ADVANCED REVELATION

TWS is
Available
on 2 Versions
of Advanced
Revelation

This widely available data base management system is a product of Revelation Technologies, Inc. The Taxonomic Workstation System was initially designed and tested under Version 1.0. This Version has since been upgraded and in general is no longer on the commercial market. The TWS was therefore converted to run on the now available (as of the publication date of this User Guide) Version 1.1. TWS software for Version 1.0 of Advanced Revelation will always be available for distribution to those users who have this Version.

APPENDIX D
COLOR MONITOR SETUP

APPENDIX D

COLOR MONITOR SET UP

- o Procedures
 1. Select VIEW option from TWS Main Menu
 2. From VIEW menu, select VIDEO option
 3. Within each of the 6 types of windows, use the arrow key to move cursor to item (border, title, background, etc.)
 4. Press {F2} for a list of color selections
 5. Select a number, or move the cursor to the desired color, and press return. Use the arrow key to move to the next item
 6. When done making selections, press {F9} to save the selections
 7. Move to next window (using the arrow key) or press {ESC} to return to the Menu (if you choose the latter option, the colors you just selected will appear on the View Menu. They will appear at the Main Menu level the next time you log onto the TWS)
- o Types of Windows & TWS Examples
 - Application—Templates used in TCL, COLLECT, and DEVELOP modes
 - Popup—Directories
 - Menu—Main Menu
 - Help—{CF1} and {CF2} help screens
 - Message—Informational window to inform user that a pressed key is not active in the current mode
- o Reference

For more details see the Set Video section of the "AREV Menus & Windows Reference"

APPENDIX E
TWS-MICRO SAINT INTERFACE UTILITY

APPENDIX E

TWS-MICRO SAINT INTERFACE UTILITY

Hooker is a data preprocessor that simplifies the initial work involved in preparing Micro Saint models from TWS data outputs. This utility allows the user to convert downloaded TWS ASCII files to Micro SAINT task networks. To use Hooker you must be fully conversant in the use and application of both Micro Saint and TWS. Hooker operates at three levels of functionality to speed up your modelling activity; it automates the initial task entry and creates a model with standard defaults; it allows you to specify the performance parameters on a task by task basis; and, it lets you hook up follow-on tasks/networks using a graphic point and shoot interface (Note: All other MicroSAINT variables, such as Release Conditions, Branch Probability equations, and Transfer Function equations need to be entered from MicroSAINT itself).

Rapid Task Creation	At the simplest level, Hooker will input a comma delimited TWS file and convert it to a non-connected Micro Saint network in which each task is created with the Micro Saint default values for time distribution type, mean time, standard deviation, and decision type.
Setting Model Task Parameters	At the second level of functionality, the user may choose to modify the default values for these parameters either for all tasks or for each individual task.
Hooking Up Task Networks	At the most complex level of functionality, the user may choose the parameters for each task and connect each task to its following tasks/networks. The connections are created using a graphic point and shoot interface that allows you to add and delete tasks to the list of follow-on tasks.

HOOKER OPERATION

Hooker is designed to interface TWS outputs to Micro Saint, and in this sense is not a Micro SAINT editor. Once a model is created using Hooker, and you have exited this utility, the Micro Saint DEV program can be used to make changes to the model (Hooker could also be used; it will create a new file by overwriting the old one with the same file ID; Hooker creates a .BAK file whenever a file is overwritten).

Hooker is located within the AREV subdirectory along with a file named MISSIONS.DOC. The following information uses this latter file for its examples. You should copy the files HOOKER.EXE and MISSIONS.DOC to the \MSAINT\NETWORKS subdirectory for the easiest use. For example, at the DOS > prompt,

```
COPY \AREV\HOOKER.EXE C:\MSAINT\NETWORKS
```

You can build your own lists in TWS using any of the techniques described in the last two chapters of this User Guide, then EXPORT (download) the list to the \MSAINT\NETWORKS location (see instructions on Exporting in the Working with Lists chapter).

1. Rapid Task Creation

You may use Hooker simply to enter the tasks into Micro Saint format. This is a simple six step process that can save you a great deal of time. The larger your model is the more time you will save.

Procedure

1. At the C prompt, go the \MSAINT\NETWORKS subdirectory, type Hooker and press Enter.
2. Type the full file name including extension, and press Enter, as shown below.

Input file : MISSIONS.DOC

3. If Hooker fails to find the input file name, it will report the error and return to the DOS prompt.
4. When Hooker finds the input file name it will request the name of the Micro Saint model that you are developing. Enter the name, as shown below.

Input file : MISSIONS.DOC
Model Name: WARGAME

5. Hooker will read in the file and display the interface screen:

Input file : MISSIONS.DOC
Model name : WARGAME

1.a	DEVELOP PLAN BASED O	Scan	F9
1.b	INITIATE INTELLIGENCE	Collect	F10
1.c	PREPARE AND ORGANIZE		
1.d	CONDUCT TROOP LEADIN	Select/Edit	PgUp/PgDn
1.e	SEE THE BATTLEFIELD	Collect Next	Home
1.f	CONTROL AND COORDINA	Change variables	F7
1.g	EMPLOY FIRES AND OTH	Save	F5
1.h	CONCENTRATE/SHIFT CO	Quit	F1
1.i	MANAGE COMBAT SERVIC		

1.a DEVELOP PLAN BASED

Mean: 10.0
Std Dev: 3.333
Distrib: 1
Decision: 2

Make global F6
Exit variables PgUp

6. Press {F1} to quit and Hooker will create a non-connected Micro Saint model, named WARGAME, from all of the tasks contained in MISSIONS.DOC and their associated task IDs. All of the tasks will have the standard Micro Saint parameter default values. If you want to set specific parameters, instead of pressing F1 at this point, press {F5} to save your work, then proceed to step number 2 of the section below.

2. Setting Model Task Parameters

You may change the model task parameters either globally (i.e., all tasks at once), or individually. The parameters that you control from Hooker are shown in the box in the lower right hand corner of the interface screen shown above. Mean Time and Standard Deviation are real numbers that may vary between 0 and the maximum that your version of Micro Saint will accept. Use the following tables to select the Time distribution type and Decision type that you want.

Value	Distribution Type
1*	Normal
2	Exponential
3	Gamma
4	Rectangular

Value	Decision Type
1	Last Task
2*	Single Choice
3	Probabilistic
4	Tactical
5	Multiple

*Default values

Procedure

1. Select a file and model name as before.
2. Select the task whose parameters you wish to change by pressing the up and down arrow keys.
3. Press F7 to change variables.
4. Select the variable that you wish to change with the arrow keys and type the desired value, then press the enter key to record the value.
5. When you have finished changing parameter variables press PgUp to return to task scanning.
6. Select a new task to change. Notice that only the task that was positioned under the highlight was changed in this procedure.
7. If you want to change all of the tasks to the same settings, do steps 1 through 5 above for one task and then press F6 (Make Global).
8. Remember, you may save the model at any time by pressing F5. Press F1 to quit if you do not wish to use Hooker to select follow-on tasks.

3. Hooking Up Task Networks

Micro Saint allows each task output to be connected to seven follow-on task inputs. Hooker lets you collect these follow-on tasks in a simple manner that will save you considerable time in Micro Saint model development. Hooker uses a point and shoot interface that eliminates typing and improves the accuracy of your model development.

Procedure

1. Open a file and press F6 to set global parameter variables.
2. Hooker is in Scan mode as indicated by the highlighted Scan F9 text located at the right-side top of the interface screen.
3. Pressing the arrow keys in the scan mode causes the task list to scroll in the scanner window. The task with the inverse highlighting will also be shown in the collector window at the lower left corner of the interface screen. Select a task to be connected.
4. Press F10 to collect follow-on tasks.
5. Highlight a follow-on task with the arrow keys and collect it by pressing the enter key. You may collect up to seven tasks using this procedure.
6. To delete a task, press PgDn. Highlight the follow-on task to be deleted with the arrow keys and press the Del key. Press PgUp to return to the collector window.
7. To collect follow-on tasks for the next task in sequence, press Home, and then proceed as in 5 and 6 above.
8. To collect follow-on tasks for any task not in sequence, press F9 to scan and proceed as in 3 through 5 above.
9. Press F1 to exit Hooker and create the final version of your Micro Saint network.

Hooker creates a file using your model name as the prefix for the DOS file name. It attaches the suffix .MOD to the file so that the Micro saint programs will recognize the file as a network model. In the example case given here, the file name would be changed to WARGAME.MOD by Hooker.

APPENDIX F
INFORMATION ON SELECTED TWS LIBRARY MODULES

APPENDIX F

INFORMATION ON SELECTED TWS LIBRARY MODULES

Table F-1

Contents and List Lengths of Selected TWS Library Modules Accessed by SCAN, VIEW, and COLLECT from the Main Menu

CORE ARMY TASK ANALYSIS			
Unit	Missions	Tasks	Subtasks
Combat Arms			
Infantry	48		
CNC		63	170
Oper		195	857
Arm Cav	7		
CNC		16	81
Oper		101	680
Artillery	33		
CNC		13	85
Oper		125	482
Combat Sppt Arms			
Engineer	13		
CNC		12	108
Oper		105	499
Mil Pol	5		
CNC		49	181
Oper		37	190
Combat Srvc Sppt			
Transpo	7		
CNC		23	86
Oper		40	102
MIS CNC	23	176	46
MIS Oper	90	624	90

Table F-1, cont.

Contents and List Lengths of Selected TWS Library Modules Accessed by SCAN, VIEW, and COLLECT from the Main Menu

COGNITIVE ABILITIES AND COGNITIVE REPERTORIES TAXONOMIES
CROSS CLASSIFIED WITH SUBTASKS OF CORE ARMY TASK ANALYSIS

<u>Unit</u>	<u>C2</u>	<u>Operations</u>
Cognitive Abilities		
Armored Cavalry	81	680
Artillery	85	482
Infantry	170	857
Engineers	108	499
Military Police	181	190
Transportation	86	102
Cognitive Repertories		
Armored Cavalry	16	101
Artillery	13	125
Infantry	63	195
Engineers	12	105
Military Police	49	37
Transportation	23	40

COGNITIVE CONSTRUCTS TAXONOMY CROSS CLASSIFIED
WITH SUBTASKS OF CORE ARMY TASK ANALYSIS

Communication	87
Comprehension	74
Concept Formation	62
Creativity	11
Decision Making	84
Attention to Detail	104
Perception of Form	73
Memory Retrieval	114
Quantitative Reasoning	72
Planning	75
Problem Solving	120
Time Sharing	82
Situational Assessment	120
Verbal Reasoning	54
Command and Control	46
Operations	90

TWS Library Modules

Table F-1, cont.

Contents and List Lengths of Selected TWS Library Modules Accessed by SCAN, VIEW, and COLLECT from the Main Menu

FIELD TEST TASK ANALYSIS		
Unit	Tasks	Subtasks
<hr/>		
Mechanized Infantry	11	61
Armor	11	148
Artillery	5	8

SKILL CLUSTERS TAXONOMY CROSS CLASSIFIED WITH
SUBTASKS FROM THE FIELD TEST TASK ANALYSIS

Mechanized Infantry	50
Armor	148
Artillery	N/A

Abbreviations: Arm Cav = Armored Cavalry; CNC = command and control; Mil Pol = military police; MTS = subset of most critical Missions/Tasks/Subtasks; N/A = not available; Oper = operations; Spst = support; Srvc = service; Transpo = transportation Branch

APPENDIX G
ORGANIZATION NUMBER

APPENDIX G

ORGANIZATION NUMBERS

Table G-1
Organization Numbers (ORGNO) of Taxonomies in the TWS Library

Levels					Levels				
ORGNO	1	2	3	4	ORGNO	1	2	3	4

CORE ARMY TASK ANALYSIS

1	CA	INF	BN	CNC	21 *	CA	CAV	PLT-A	CNC
2	CA	INF	BN	OPS	22 *	CA	CAV	PLT-A	OPS
3 *	CA	INF	CO	CNC	23	CS	ENGR	BN	CNC
4 *	CA	INF	CO	OPS	24	CS	ENGR	BN	OPS
5 *	CA	INF	PLT	CNC	25 *	CS	ENGR	CO	CNC
6 *	CA	INF	PLT	OPS	26 *	CS	ENGR	CO	OPS
7 *	CA	ARTY	BTRY	CNC	27 *	CS	ENGR	PLT	CNC
8 *	CA	ARTY	BTRY	OPS	28 *	CS	ENGR	PLT	OPS
9 *	CA	ARTY	SECT	CNC	29 *	CS	ENGR	SECT	CNC
10 *	CA	ARTY	SECT	OPS	30 *	CS	ENGR	SECT	OPS
11	CA	ARTY	BN	CNC	31	CS	MP	BN	CNC
12	CA	ARTY	BN	OPS	32	CS	MP	BN	OPS
13	CA	CAV	SQDN	CNC	33 *	CS	MP	CO	CNC
14	CA	CAV	SQDN	OPS	34 *	CS	MP	CO	OPS
15 *	CA	CAV	TANK	CNC	35 *	CS	MP	PLT	CNC
16 *	CA	CAV	TANK	OPS	37	CSS	TRANS	CO	CNC
17 *	CA	CAV	TRP	CNC	38 *	CSS	TRANS	BN	OPS
18 *	CA	CAV	TRP	OPS	40	CSS	TRANS	CO	OPS
19 *	CA	CAV	PLT-C	CNC	41 *	CSS	TRANS	PLT	CNC
20 *	CA	CAV	PLT-C	OPS	42 *	CSS	TRANS	PLT	OPS

FIELD TEST TASK ANALYSIS

101	CFEX	FTKNX	TANK	P2	110	CFEX	FTBENG	BFV	P2
111	CFEX	ARTY	M109	PLAYER					

PROTECTIVE ENSEMBLE TASK DEGRADATION TAXONOMY

200	BRL	APG	DUGWAY	DO-49
-----	-----	-----	--------	-------

Note. When entering new taxonomies into the TWS, use an ORGNO other than those listed above.

Abbreviations: APG = Aberdeen Proving Ground, MD; ARTY = artillery; BN = battalion; BRL = Ballistic Research Laboratory, APG, MD; BTRY = battery; BFV = Bradley Fighting Vehicle; CA = combat arms; CAV = (armored) cavalry; CFEX = Center for

Table G-1, cont.

Organization Numbers (ORGNO) of Taxonomies in the TWS Library

Excellence; CNC = command and control; CO = company; CS = combat support; CSS = combat service support; DO-49 = research program; DUGWAY = Dugway Proving Ground, Utah; ENGR = engineer; FTBENG = Fort Benning; FTKX = Fort Knox; INF = infantry; M109 = howitzer; MP = military police; OPS = operations; P2 = (research program on) Physiological and Psychological Effects of NBC and Extended Operations on Combined Arms Crews; PLAYER = (test) player, or field test scenario; PLT = platoon; PLT/A = tank platoon; PLT/C = cavalry platoon; SQDN = squadron; TRANS = transportation; TRP = troop

*

These ORGNOs do not actually contain any lists, but an ORGNO and ORGCHART for them have been "reserved" as place holders for those users who wish to develop such taxonomies.

APPENDIX H
TERMINAL CONTROL LANGUAGE

APPENDIX H

TERMINAL CONTROL LANGUAGE

- o {F5} calls up the Feature
To access the TCL mode, simply press {F5}; The TCL window appears and is ready for a query command.
- o COUNT, LIST & SORT Commands
The COUNT statement tallies the number of records that fit the conditions of the query; LIST presents screen output of the records which equal the query description. SORT organizes them according to stated criteria.
- o Query Statement Format
The contents of a query statement are (1) a command verb; (2) file type to be searched; and (3) the selection criteria. For example, in

COUNT MISSIONS WITH ORGNO = 1

COUNT is the command verb, MISSIONS is the file type, and the remaining phrase constitutes the criteria. File types are the 13 selections from the SCAN menu. Only certain key words in the selection criteria can be matched with a given file type (in the above example, ORGNO is a key word). A number of sample query statements is shown in Table H-1. A full listing of file types and key words is provided in Table H-2. For the above example, a value of 12 would be returned to the query, indicating that 12 missions exist under Organization Number 1.
- o Use F2 as a Query Aid
TCL queries you make during a given session are stored at the top of a list accessed by pressing {F2}. A {CR} by the highlighted statement will place it in the TCL window where it is now available for instant processing or editing.

Table H-1

Examples of Terminal Control Language (TCL) Query Statements

 (Note: turn on CAPS LOCK for following TCL commands)

<u>Statement</u>	<u>Comments</u>
COUNT MISSIONS WITH ORGNO = 37	Space required on either side of the = sign
SORT MISSIONS WITH ORGNO BETWEEN 37 AND 40	37 & 40 are included in the sort
LIST MISSIONS WITH MISSION 'PERFORM']'	'word or phrase]' = beginning with; use upper & lower case letters for an exact match
SORT MISSIONS WITH MISSION.VERB MATCHES 'PERFORM'	All Core taxonomy titles begin with verbs
LIST TASKS WITH VERB MATCHES 'PRODUCT'	See Verbs, Table 1
LIST TASKS WITH WITH TASK '[PLANNING]'	'[word or phrase]' = anywhere in text
LIST TASKS WITH TASK '[TARGETS.'	'[word or phrase = ending with; use period in search phrase if title ends with one
LIST MISSIONS WITH MISSIONID = 'A'	
LIST MISSIONS WITH ORGNO = 40 AND WITH MISSION.VERB 'PERFORM']'	
LIST CONDITIONS WITH CONDITION '[Air defense]'	
SORT FUNCTIONS WITH ID > 1 AND WITH ID < 1.2	
LIST PARAMETERS WITH ID > = 2 AND WITH ID < 4	
LIST PARAMETERS WITH PARAMETER '[Data]'	
LIST SUBTASKS WITH ORGNO = 1 AND WITH MISSIONID MATCHES 'C' AND WITH TASKNO = 1	
LIST ABILITIES WITH A1 = 1 AND WITH A6 = 0	

Table H-2

Contents of Terminal Control Language (TCL) Query Statements

COMMAND VERBS

LIST	SORT	COUNT	SELECT	SSELECT
------	------	-------	--------	---------

FILETYPES AND KEY WORDS FOR SELECTION CRITERION

```

MISSIONS:      ORGNO  MISSIONID  MISSION  CONDITIONS
                FUNCTIONS  MISSION.VERB

```

TASKS:	ORGNO	MISSIONID	TASKNO	TASK	SYNONYM	VERB
	PARAMETERS					

SUBTASKS:	ORGNO	MISSIONID	TASKNO	SUBTASKID	SUBTASK
	ELEMENTS	SUBTASK.VERB			

ABILITIES: ORGNO MISSIONID TASKNO SUBTASKID
The 21 Abilities A1 thru A21

REPERTORIES: ORGNO MISSIONID TASKNO SUBTASKID
The 8 Repertories: NUMF, VISP, CONR, DIVR, COVA,
DIVA, MEMO, STIM

CONSTRUCTS: ORGNO MISSIONID TASKNO SUBTASKID
The 14 Constructs: ATD, PRF, MRR, TMS, CMP, CNF,
VRR, QNN, PLN, STA, DCM, CMD, PRO, CRE

SKILLS: ORGNO MISSIONID TASKNO SUBTASKID
The 42 Skills A1 thru A42

GENERIC: ORGNO MISSIONID TASKNO SUBTASKID

CONDITIONS:	CONDITION
-------------	-----------

FUNCTIONS: ID

PARAMETERS:	PARAMETER	ID
-------------	-----------	----

Table H-2, cont.

Contents of Terminal Control Language (TCL) Query Statements

SELECTION CRITERIA LANGUAGE

- (1) AND
 - (2) OR
 - (3) WITH
 - (4) BY
 - (5) THAT
 - (6) WHICH
 - (7) INCLUDING
 - (8) CONTAINING (short form is '[...])'
 - (9) BEGINNING (short form is '...])'
 - (10) ENDING (short form is '[...')
 - (11) WITHOUT
 - (12) EXCLUDING
 - (13) UNLESS
 - (14) EQUAL (short form is =)
 - (15) LESS THAN (short forms are LT and =)
 - (16) LESS THAN OR EQUAL TO (short form is < =)
 - (17) GREATER THAN (short forms are > and GT)
 - (18) GREATER THAN OR EQUAL TO (short form is > =)
 - (19) NOT EQUAL (short forms are # and <>)
 - (20) FROM ... TO ...
 - (21) BETWEEN ... AND ...
 - (22) MATCHES '...'
-

Reference: Guide to Filtering. ADVANCED REVELATION TECHNICAL
REFERENCE.

APPENDIX I
ACCESSING EXTERNAL APPLICATIONS PROGRAMS

APPENDIX I

ACCESSING EXTERNAL APPLICATIONS PROGRAMS

INTRODUCTION

Many users are familiar with the operation of background programs like SideKick. These programs are usually loaded when the computer is first started, and they remain resident in the background while the user is running other software. Any time the user wishes, the background program may be popped up, used and then exited, returning the user to the program that was running when the background program was called. These programs are called "terminate and stay resident" programs or simply TSRs. Some TSRs are very well mannered; that is, they operate without conflicting with other applications.

Using external Programs from within TWS

The External Program Menu lets you use TWS as a well mannered terminate and stay resident program. Any time you want to use another program to process TWS data or to perform some other external task, you may select the program that you want to run from this menu.

Example scenario

For example, you might want to use TWS to prepare tables of Repertory demands and Task listings as DOS file reports, then use your word processor to customize the document to match the format of a report that you are preparing. In this example, you would sign on to TWS and COLLECT the lists that you want to output. Next, you would select the File-Print Menu and prepare the DOS file reports. In the last step you would select your word processor from the External Program Menu and format the report. When you exit your word processor, you will automatically return to TWS. TWS takes up a very small amount of RAM when you access another program this way, which means that you may use the full capability of your external programs.

Simple Batch files are provided with TWS

Very simple DOS batch file programs are provided below as examples for accessing the external applications programs. You may need to change the path directory to fit your own setup. Shells are provided in the AREV directory with a .BAT extension (e.g., WORDPERF.BAT). To fill out a shell from MS DOS, get into the AREV directory, and use the

External Applications

EDLIN command (e.g., EDLIN WORDPERF.BAT). See your DOS User Guide for editing details.

WORDSTAR.BAT

```
echo off
rem change directory to ws
cd\ws
rem call wordstar.
WS
rem change back to AREV directory
cd\AREV
rem {F6} = ^Z = Ctrl Z = EOF mark
^Z
```

WORDPERF.BAT

```
echo off
rem change directory to wp
cd\wp
rem call wordperfect.
WP
rem change back to AREV directory
cd\AREV
rem ^Z = Ctrl Z = EOF mark
^Z
```

SUPRCALC.BAT

```
echo off
rem change directory to scalc
cd\scalc
rem invoke SuperCalc software
SC
rem change back to AREV directory
cd\AREV
rem ^Z = Ctrl Z = EOF mark
^Z
```

DBASEIII.BAT

```
echo off
rem change to dBASE program directory
cd\DB
rem invoke dBASE software
DB
rem change back to AREV directory
cd\AREV
rem ^Z = Ctrl Z = EOF mark ^Z
^Z
```

External Applications

PROLOG.BAT

```
echo off
rem change to AI directory
cd\AI
rem invoke PROLOG software
AP
rem change back to AREV directory
cd\AREV
rem ^Z = Ctrl Z = EOF mark ^Z
^Z
```

MODEM.BAT

```
echo off
rem change to modem directory
cd\modem
rem invoke pcplus software
pcplus
rem change back to AREV directory
cd\AREV
rem ^Z = Ctrl Z = EOF mark ^Z
^Z
```

APPENDIX J

CHANGING TEMPLATES TO ACCEPT DIFFERENT TYPES OF ID CODES

Changing Templates

APPENDIX J

CHANGING TEMPLATES TO ACCEPT DIFFERENT TYPES OF ID CODES

- o ID Entry Checks
The Develop templates are set up to check the type of input to aid you in correct entry. ORGNO must also be numeric. Mission is configured to accept a letter (automatically changed to upper case if not so entered). Task accepts a number, and subtask accepts a lower case letter. If your needs dictate number codes for mission and subtask, the following procedures need to be performed.

- o Changing the Validation Codes
 - From the TWS Main Menu, choose EXIT, then AREV, then DESIGN, and finally WINDOW.
 - If you need to change just Missions to accept number codes, do steps 1 through 6; if you need to change subtasks to accept numbers do step 7

Step 1: At the window name prompt, enter MISSION.ENTRY

Step 2: At the template, move the cursor to any part of the prompt MISSION_ID and press {F6}. At the menu, select Prompt Window, {CR}

Step 3: Move the cursor down to the "In pattern" line which contains 0A, press {F4}, then {CR}. Type 0N, then press {CR} until the cursor appears on the "Out pattern" line

Step 4: Press {F9}, followed by {CR} {CR} {CR}. Then press {F9} again

Step 5: {ESC} brings you back to the menus. Select WINDOW again from the menu, then type in TASK.ENTRY. Proceed as in Steps 2 through 4

Step 6: {ESC} to the menus, and select WINDOW again, then type SUBTASK.ENTRY. Proceed as in Steps 2 through 4

Changing Templates

Step 7: If you are not changing the subtask code acceptor, press {ESC}. If you are, move the cursor to any position in the prompt SUBTASK ID (note that you are still in SUBTASK.ENTRY), and press {F6}, then select Prompt Window {CR}. Proceed as in steps 3 through 4, then {ESC} back to the TWS Menus

Step 8: If you need to allow Missions to accept numbers in the Custom (Generic) taxonomy, select WINDOW from the Main Menu, then type GENERIC.ENTRY. Proceed as indicated in Steps 2 through 4. {ESC} to the menus

- o Templates will now accept both kinds of input

The applicable template is now set up to accept any kind of input and is therefore generalized for any taxonomies you want to create later which do require a letter for Missions.

APPENDIX K
IMPORTING SUBTASKS WHICH CONTAIN ELEMENTS

APPENDIX K

IMPORTING SUBTASKS WHICH CONTAIN ELEMENTS

Two Ways to
Enter Elements

Most taxonomic needs are adequately handled by three levels—in the case of the TWS, Missions, Tasks, and Subtasks (or for the example in Table 2, Departments, Branches, and Sections). If a fourth level is required, the Elements feature may be used. Elements associated with a given Subtask can be entered directly into the special section of the Subtask DEVELOP template (see the last chapter of this User Guide). The Subtask list could also be created off line from the TWS. This appendix outlines the procedures for off line preparation of elements and importing of the file using the ASCII feature of the TRANSLATE function.

Requirements

An editor or word processing package which allows the entry of the ASCII 253 character (a superscripted 2) and which allows string input of longer than 255 characters without entering a carriage return or linefeed. If you have such capability, proceed to Technique 1. If your editor or package does not have this capability and you have not created the list yet, go to Technique 2; if your Subtask list containing elements has already been prepared, go to Step 2 of Technique 2.

o Technique 1

Step 1

Create your Subtask-with-Elements list off line using your editor or word processing package as follows: for each Subtask, type

- the ID key
- a comma
- the Subtask title
- a comma
- the number of the element (period or other symbol after it if desired)
- the Element title
- the ASCII 253 character (typically entered by pressing {ALT}, typing 253 from the keypad section of the keyboard, then releasing the ALT key)
- repeat for next Element number and title, ASCII character, etc.

Importing Elements

- Press {Return} when all Element information for that Subtask has been entered (i.e., carriage return, line feed codes are required between subtasks)

Example from Table 2: Assume that in building the taxonomy for the ACME Company example, you want to add Elements to the Employee Records section of the Personnel Branch of the Administration Department

300*D*1*a,Employee Records,1) Technical Personnel!2) Admin Personnel!3) Support Staff

A ! is used here to represent the super-scripted 2 (ASCII 253 character); the TWS will use it as the disjoiner character to separate the Elements under each Subtask. You would press return in the above example after typing "Staff".

Step 2

Save the Subtask file as an ASCII file, and IMPORT it to the TWS following the procedures outlined in the chapter Entering New Taxonomies. The only change required on the Subtask Import template is to add ELEMENTS to the "Field Name" section at the bottom (i.e., add ELEMENTS after @ID and SUBTASK). When you finish the Import procedures and call up the Subtask list from the appropriate Directories (e.g., from VIEW or DEVELOP), the Elements will be listed in row format under each Subtask.

o Technique 2

Step 1

Create the Subtask list off line as you normally would; follow the format procedures in Step 1 of Technique 1 (except your entries will not include the ASCII 253 character at this time). Place the list in ASCII format within the AREV Directory.

Step 2

- From TCL in TWS (i.e., press {F5}) type

EDIT DOS filename

- Scroll to the end of each element and insert the ASCII 253 character (press {ALT}, type 253 from the Keypad section of the keyboard, and release ALT). Make sure

Importing Elements

you have carriage return, line feed codes at the end of each subtask (if not they can be inserted by typing 13 and 10 instead of 253), and an end-of-file character (26) after the last subtask. If your editor or word processing package made a carriage return, line feed during your data entry (sometimes called a "soft return") you can easily delete them while in the Edit mode by scrolling to the location and pressing your {Del} key. If you want to see what these characters look like, just move to a blank line and press ALT followed by 13 (release ALT), then ALT 10 (release ALT).

- When finished, press {F9} to save the file.
- Go to Step 2 of Technique 1

APPENDIX L
SUBJECT INDEX

APPENDIX L

SUBJECT INDEX

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APPENDIX M
TWS DESK AID

TWS Desk Aid:

Menu Outline:

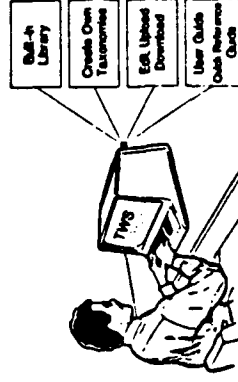
Summary of Frequently Used Selections

TAXONOMIC WORKSTATION SYSTEM MAIN MENU	Data Base Structure Inventory Analysis..... Additional Scales.....		Synonyms Orgchart IndexLists Conditions Functions Parameters View Missions Jobs Duties Tasks Subtasks View Abilities Repertories Constructs Skills Generic View
Develop	Synonyms..... Orgchart..... Conditions..... Functions..... Parameters..... Missions..... Tasks..... Subtasks..... Abilities..... Repertories..... Constructs..... Skills.....	Used for defining Organizational header information for list structures Organizational Number uniquely identifies a given taxonomy ¹ Conditions of the Battlefield ² TRADOC's Blueprint of the Battlefield ² Standard Task Analysis Parameters ³ Main level of a taxonomy Second level of classification scheme Third level of hierarchy Taxonomy of 21 Cognitive Abilities ⁴ Taxonomy of 8 Cognitive Abilities ³ Taxonomy of 14 Cognitive Constructs ⁴ 42-item taxonomy of cognitive, psychomotor, & sensorial skills ⁴	
Scan	Structure..... Inventory..... Additional Scales.....	Synonyms Orgchart Conditions Functions Parameters Missions Jobs Duties Tasks Subtasks Inventory Abilities Repertories Constructs Skills Generic II	
Collect			
View			

- 1 See Appendix G of User Guide for more information
- 2 Cross classifiable with Mission records. See also Table 1.
- 3 Cross classifiable with Task records. See also Table 1.
- 4 Cross classifiable with Subtask records. See also Table 1.

APPENDIX N
TWS QUICK REFERENCE GUIDE

Quick Reference Guide



A PC-based software package for analysis and integration of taxonomic data

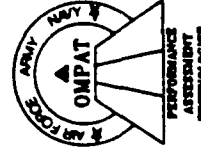
LOGON Procedures

- From DOS prompt type:
CD\AREV (CR)
AREV (CR)
- At the TWS Main Menu, press F5
- At the window type:
ATTACH TWS (CR)
- After message has flashed, press ESC

Core Taxonomy Structure

- ID key consists of (with examples):
—ORGNO (organization number): 37
—MISSIONID (upper case letter): 37*A
—TASKNO (numeric): 37*A*1
—SUBTASKID (lower case letter): 37*A*1*a
- ORGCHART information is related to the ORGNO
- Mission, Task, & Subtask titles are related to their respective codes

The Taxonomic Workstation System was created for the US Army Research Institute by JWK International Corporation & McFann, Gray, & Associates, Inc., and was sponsored by the Office of Military Performance Assessment Technology and the US Army TEXCOM Armor and Engineer Board



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Summary of Frequently used Function Keys

- F1:** Context help on using window prompts.
Ex.: Information on items in EXPORT & IMPORT templates
- F2:** Option help: list of available codes & sample commands:
—Query aid in TCL
—Sample commands in Edit mode
—Entry options for IMPORT & EXPORT template items
—Color selections for windows & menus from the View/Video option
- Ctrl-F1:** General help
Ctrl-F2: Concept help
- F3:** Zoom window for using editor with any typed entry, including DEVELOP templates, TCL, and KEYLIST EDIT windows
- F5:** Used to call up Terminal Control Language
- F6:** Informational windows:
—Use in VIEW with cross-classified taxonomies
—Use with DEVELOP templates to enter information from specified taxonomies into the special sections
- F7:** Save information
Alt-D: Press twice to delete a record when in DEVELOP template mode
Ctrl-D: Delete line in Edit Mode

Frequently Used EXIT Options from the TWS Main Menu:

- LOGOFF quits the TWS & puts you at DOS (reentry to TWS is via LOGON procedures)
- DOS option is for minor processing in DOS. Accessible via ACCESS and EXIT options from menu. Return to TWS by typing EXIT
- SUSPEND is for major processing from DOS (AREV is sent to a temporary hard disk file). Return to TWS by typing EXIT
- ACCESS allows entry to external applications programs such as word processing packages. TWS stays resident, avoiding re-logon. Simply press ENTER to return to TWS
- AREV option calls up the ADVANCED REVELATION Main Menu. Return to TWS by pressing ESC

List Maintenance

Required to keep files of lists current with new data entries or deletions. See procedures in List Maintenance subsection of last two chapters of the User Guide

Summary of TWS Functions

BROWSING thru the Library of Taxonomies

- **SCAN** for "raw list" format
- **VIEW** for a more detailed and structured format which includes organizational information pertaining to the taxonomy
- WORKING** with lists in the TWS Library
- **COLLECT** functions to select and order a subset of records from a host list
- **ENTRY/UPDATE** templates are used to add, modify, or delete records from a taxonomy. Accessed via **DEVELOP** from the TWS Main Menu
- Download lists to ASCII
- FILE** function from Main Menu downloads list in structured **VIEW** format
- EXPORT** templates allow custom transfer of lists. Useful for additional processing with external applications packages.

● COPY lists

- **PRINT** lists
- PRINT** function from Main Menu for structured reports (**VIEW** format)
- EXPORT**; then print under control of a word processing package

CREATING and **ENTERING** new taxonomies

- **IMPORT** an ASCII file created off line

- Use **ENTRY/UPDATE DEVELOP** templates to enter taxonomies under direct TWS control. Build custom taxonomies with the TWS **GENERIC** feature (customs can be cross-linked with other taxonomies)

Menu Selection & Movement

- Use arrow keys or first letter of selection to highlight the menu item; press **ENTER**
- Directory Selections:
 - Type in number of selection, or use arrow keys to highlight selection. Press **ENTER**
 - PgUp or PgDn multi-window Directories
- **ESC** key brings you back towards TWS Main Menu
- Move (through screen output of lists) by:
 - Pressing PgUp or PgDn if "pg up/down" appears in lower-right corner of screen
 - Pressing **ENTER** if "Move" appears in corner

TCL

Terminal Control Language is used for queries and List Maintenance. Press **F3**; return by pressing **ESC** (if you entered **TCL** from the **EXIT** option of the TWS Main Menu, return by typing **RESET**)

Example Query: **LIST TASKS WITH TASK CONTAINING 'PLAN'**

Examples of Taxonomies in the TWS Library

- **CORE ARMY TASK ANALYSIS**: task analysis of Operation & Command & Control missions for 3 major commands & 6 branches. Lists organized by Missions, Tasks, & Subtasks. Information from **ARTEPS**

● ABILITY taxonomies:

- Cognitive Abilities**: 21 abilities; can be cross-linked with Subtask records.
- Cognitive Repertories**: 8 categories (based on the 21 cognitive abilities); cross-classifiable with Tasks
- Cognitive Constructs**: 14 item taxonomy; cross-classifiable with Subtask records
- Skills**: 42-item taxonomy consisting of cognitive, sensory, & psychomotor skills. Can be cross-linked with Subtask records
- Skill Clusters**: 10 categories, derived from the 42-item Skills taxonomy.

- **CONDITIONS** taxonomy: a classification system containing environmental, topographical, personnel, & tactical conditions. Can be cross-linked with Missions.

- **PARAMETERS** taxonomy: a classification system containing categories of Input, Central Processing, Response, Feedback, Environmental, Safety, Health, Performance Standards & Workload, & Social & Organizational. Items are cross-classifiable with Tasks.

- **FUNCTIONS** taxonomy: Blueprint of the Battlefield functions are organized under the 7 Battlefield Operating Systems: Maneuver, Fire Support, Air Defense, Command & Control, Intelligence, Mobility & Survivability, & Combat Service Support. Items are cross-classifiable with Mission records.